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IN THE

# Supreme Court of the United States

OCTOBER TERM, 1986

EASTMAN KODAK COMPANY,

*Petitioner,*

v.

POLAROID CORPORATION,

*Respondent.*

## PETITION FOR A WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

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## Questions Presented

1. Does the standard employed by the Court of Appeals for the Federal Circuit to judge the validity of patents challenged for obviousness conflict with the standard set forth by this Court?

2. Can the practice of prior art infringe a valid patent?

3. Are a district court's ultimate conclusions on the validity of patents challenged for obviousness subject to the clearly-erroneous standard of review under Federal Rule of Civil Procedure 52(a)?

**Statement Pursuant to Rule 28.1**

The subsidiaries and affiliates of Eastman Kodak Company, other than wholly owned subsidiaries, are listed below:

Miller Bros. Hall & Company Limited

Photofinishers (Glasgow) Limited

Reflex Photo Works Limited

The Roll Film Company Limited

Stuart Photo Services Limited

Taylors Dev. & Printing Works Limited

Consumer Developments Limited

Ctiy Photo Limited

Ordinant S.A.R.L.

Verbatim Commercial Ltd.

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**OCTOBER TERM, 1986**

No. 86-

EASTMAN KODAK COMPANY,

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POLAROID CORPORATION,

*Respondent.*

## PETITION FOR A WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

Petitioner Eastman Kodak Company ("Kodak") respectfully prays that a writ of certiorari issue to review the judgment of the United States Court of Appeals for the Federal Circuit.

### Opinions Below

The opinion of the court of appeals (A1-42) is reported at 789 F.2d 1556 (1986). The opinions of the district court following trial (43-149) are reported at 228 U.S.P.Q. 305 (D. Mass. 1985)[1]

### Jurisdiction

The judgment of the court of appeals was entered on April 25, 1986 (A184). This Court has jurisdiction under 28 U.S.C. § 1254(1).

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[1] "A" citations are to pages of the appendix to this petition. "JA" citations are to the joint appendix in the court of appeals.

## Constitutional Provision and Statutes Involved

Article I, section 8, clause 8 of the Constitution and 35 U.S.C. §§ 101, 102, 103, 112 and 282 are set forth in the appendix hereto (A185-89).

## Statement of the Case

The standard of invention required to obtain a patent "is basically constitutional, Article I, § 8, of the Constitution authorizing Congress '[t]o promote the Progress of . . . useful Arts' by allowing inventors monopolies for limited times." *Anderson's-Black Rock, Inc.* v. *Pavement Salvage Co.*, 396 U.S. 57, 61 (1969). That standard, and its statutory corollary, nonobviousness, *see* 35 U.S.C. § 103, "may not be ignored." *Graham* v. *John Deere Co.*, 383 U.S. 1, 6 (1966) (*"John Deere"*).

This case raises significant issues relating to enforcement of the constitutional standard by the Court of Appeals for the Federal Circuit, which has exclusive jurisdiction over patent issues, *see* 28 U.S.C. § 1292(c). It has been widely recognized that the Federal Circuit's decisions since its creation in 1982 have wrought a sea change in patent law and that this change is of substantial importance to the Nation's economy. This Court has yet to review the substantive legal standards of patentability developed by the Federal Circuit to determine whether those standards are in conflict with this Court's decisions. This case shows that they are in conflict, both specifically as to combination patents and generally as to the application of prior art to a new product or field. It also illustrates the broad implications of that divergence.

### Background

The patents here at issue relate to the field of "instant" photography, in which an integrated camera and film sys-

tem enables the user to view a photographic print within minutes after "snapping" a picture. In contrast, "conventional" photography requires development and printing of exposed film in a darkroom, with an attendant delay between exposure of a frame of film and creation of a print from it.

Instant photography was invented by Dr. Edwin H. Land, the founder of respondent Polaroid Corporation ("Polaroid"), and the first instant system, utilizing "peel apart" sepia (*i.e.*, brown-and-white) film, was marketed by Polaroid in 1948.

Polaroid retained a monopoly in the field for almost three decades until Kodak entered the market with a competing system in April 1976. By this time, instant photography had evolved to the use of "integral" color film, which required no peeling or treatment after exiting the camera. Kodak's instant system was not a replication of the SX-70 system then being produced by Polaroid, but the result of a development effort that cost tens of millions of dollars and took over seven years. The two systems were not even compatible: film designed for one system cannot be used in the other. Nonetheless, a week after Kodak's entry into the instant photography field, Polaroid sought to reclaim its monopoly by bringing this action for alleged patent infringement, over which the district court had jurisdiction under 28 U.S.C. § 1338(a).

**The District Court's Decision**

Following a bench trial, the district court held various claims of seven Polaroid patents, covering six alleged "inventions" relating to particular elements of film and camera design, valid as constituting genuine inventions not obvious or anticipated by prior art. The court concluded that cer-

tain claims of each of those patents were infringed by elements of Kodak's instant system.[2] On October 11, 1985, the court entered a judgment on liability as to all seven patents, reserving damage issues for a later trial and granting a permanent injunction to take effect January 9, 1986 against infringement of the five unexpired patents.

Although the district court's opinion refers to the subsidiary factual determinations required for the determination of obviousness by this Court in *John Deere*, 383 U.S. at 17, it contains no discussion of the standards for patentability established by this Court's decisions and no articulation of the application of those standards to the alleged "inventions" it held validly patented and infringed. The court did, however, emphasize that Polaroid's integral instant color system, the SX-70, was "an elegant, highly sophisticated camera and film system," referring to Dr. Land's description of it at trial as "absolute one-step photography" (A47), as well as to Kodak's recognition that it "set the standard Kodak would have to meet" (A50). Though the court accepted that integral instant color photography was not itself a patented invention (*see* A50), the court repeatedly adverted to the "unique" or "difficult" problems of such photography and, as the following summary of its rulings shows, invariably rejected the applicability of prior art on the ground that its teaching did not relate expressly to "integral" or "instant" or "color" photography (*see, e.g.*, A61, 84-85, 105-09, 125-28, 138 n.38).

The chemistry and mechanics involved in instant photography are discussed in the district court's opinion. As to the four film and two camera "inventions" claimed in the seven patents held valid and infringed, the facts as found

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[2] The remaining claims were resolved in Kodak's favor, either on validity, infringement or both.

and the district court's conclusions, so far as material here, were as follows:

**Film**

*Patent 3,362,821: Use of an acid layer in color instant film to reduce the pH and thereby stabilize the image.*—Polaroid's prior art patent '030 taught the use of a polymeric acid layer to reduce the pH in peel-apart sepia instant film after development and thereby stabilize the image (A60). Patent '821 claims the use of the same layer for the same purpose in color film (A57, 59). The district court held that '030 did not anticipate '821 or render its claims obvious because the former was limited to sepia film and the latter related to the "unique requirements" of color and the means of meeting those requirements (A61). Kodak's use of an acid layer in its integral color film was held to infringe '821, rather than to practice the prior art of '030, simply because Kodak's film was a color film, not a sepia film, even though both the concept of the polymeric acid layer and its position in the film unit were taught by '030 (A60-61).

*Patent 3,245,789: Use of negative dye developers in color instant film.*—Kodak's prior art Australian patent '147 and other Kodak prior art taught the use of a two-step process (oxidation followed by hydrolysis) to release dyes in the development of color instant film (A72-73). Patent '789 claims a one-step process (oxidation only) to achieve the same end (A75). Kodak's integral color film employed a two-step process like the prior art, but greatly speeded up that process by using a highly alkaline processing fluid (A75, JA 13,382). The district court held that because Kodak's two-step process was so fast that the two reactions happened "in one fell swoop," Kodak was practicing the one-step process claimed by '789, not its own prior art (A75).

*Patents 3,594,165 and 3,689,262: Use of carbon black in processing fluid to create a "darkroom" in integral instant color film.*—Integral instant film of the kind made by Kodak and referred to in the Polaroid '165/'262 patents has a built-in "darkroom" to permit development of the film outside the camera. One wall of the "darkroom" is an opaque layer; the second wall is formed after exposure by a layer of processing fluid made opaque by the addition of carbon black. The picture is formed by diffusion of the color dyes out of the "darkroom" through the opaque layer into an image-receiving layer. The placement of the photosensitive, dye, opaque and image-receiving layers was shown in Polaroid's prior art patent '645 (A82-83). Although the '645 patent used an opaque flap instead of opaque processing fluid to form the second wall of the "darkroom," Polaroid's prior art patent '659 showed that opaque processing fluid could be used instead of the flap for this function. The district court, however, refused to combine the teachings of the two prior art patents, and instead held that the '659 patent was not prior art for integral film because the '659 patent primarily related to x-ray film, whose components differed from integral instant film (A84-85).

*Patent 3,578,540: Use of polyester as a film base.*—All film has a base or support on which photosensitive material is coated. For years cellulose acetate was widely used for supports (A105), but following DuPont's introduction of polyester for film in 1955, film manufacturers, including Kodak, began substituting that new and superior material, which was water impermeable, for cellulose acetate (A105). Polaroid prior art patent '342 taught the use of two identical cellulose acetate supports in an integral black-and-white instant film, and Polaroid prior art patent '606 also taught the use of two supports in an integral instant color film "like that of '540" (A107). The district court nonetheless

held that '540's substitution of two polyester supports for two cellulose acetate supports was not anticipated or obvious because none of the prior art taught "the use of water-impermeable symmetrical supports" in integral instant film and neither Kodak nor Polaroid "considered using two polyester supports with integral film units until Dr. Land did so" in '540 (A105).

**Cameras**

*Patent 3,753,392: Use of a "rear pick" to start the ejection of an exposed film unit from an instant camera.*— Ejection of the exposed film unit from an instant camera after a picture is taken is accomplished by means of motorized rollers, which also rupture a pod containing processing fluid and spread the fluid within the film unit. Before the rollers can perform their function, the film unit must be pushed or pulled into their grip, which may be done by a hook or other common mechanical device (*see* A123-24). A variety of such devices had been disclosed for use in instant cameras (A124-25), and "rear picks" had been used in cameras and in card machines for decades (A124-27; JA 14,324-25). The district court held '392 valid in its particular application, however, because "none of the prior art [rear pick] patents or cameras had to solve the practical problems of a camera that not only stores and exposes film, but also processes it," *i.e.*, an instant camera (A128).

*Patent 3,810,211: Bending of an exposed instant film unit as it exits the camera.*—Polaroid's prior art patent '619 disclosed an instant camera structure that bends an exposed peel-apart film unit as it exits the camera "through a curved passage" (A135). Patent '211 claimed an instant camera structure that bends an exposed integral film unit as it exits the camera. The district court held that '211 was neither anticipated nor obvious because '619 did not dis-

close two benefits of bending in integral instant photography: better control of the spreading of processing fluid within the film unit and protection from ambient light of that portion of the film unit as yet untreated with the fluid (A135). These benefits were disclosed but not claimed as inventions in '211 (A133-35).

The district court also held that Kodak's purchase and examination of Polaroid's SX-70 cameras and film had "some bearing on the judgment concerning the underlying patents," as did Kodak's written instruction to its technical staff that research and development "should not be constrained by what an individual feels is potential patent infringement," although the court said the latter factor was "by no means decisive" (A50-51).[3]

**The Court of Appeals' Decision**

On Kodak's appeal,[4] the court of appeals ordered expedited briefing, heard argument on January 6, 1986, and

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[3] The full statement of Kodak's Development Committee, from which the district court quoted only the first part, was as follows (JA 8267):

> "[D]evelopment should not be constrained by what an individual feels is potential patent infringement. The Patent Office [*i.e.*, Kodak's patent department] should be consulted."

[4] The district court entered an order directing the entry of a final judgment pursuant to Rule 54(b) of the Federal Rules of Civil Procedure, even though damages remained to be tried. While in another context the Rule 54(b) determination might have been erroneous under *Liberty Mutual Ins. Co.* v. *Wetzel*, 424 U.S. 737 (1976), 28 U.S.C. § 1292(c)(2) allows appeal to the Court of Appeals for the Federal Circuit, *see* 28 U.S.C. § 1295(a), from a judgment in a patent infringement case which "is final except for an accounting," *i.e.*, the determination of damages, *see H.A. Jones Co.* v. *KSM Fastening Systems, Inc.*, 745 F.2d 630, 631-32 (Fed. Cir. 1984). In addition to its jurisdiction under § 1292(c)(2) over the whole of Kodak's appeal, the court of appeals had jurisdiction over

*(footnote continued on following page)*

on January 8, 1986 denied a stay of the injunction pending final determination of the appeal (A182). After Justice Powell denied Kodak's emergency application for a stay of the injunction, Kodak ceased the manufacture and marketing of instant photographic products on January 9, 1986, thus restoring Polaroid's monopoly four decades after its inception.

On April 25, 1986, four days after this Court requested "the Federal Circuit's informed opinion on the complex issue" of the role of law and fact in determining obviousness, *see Dennison Mfg. Co.* v. *Panduit Corp.*, 106 S. Ct. 1578, 1579 (1986), the court of appeals handed down its opinion affirming the district court "in all respects" (A2). The court framed the issue before it on validity as whether "the district court committed reversible error in holding that Kodak had failed to carry its burden in respect of the validity of certain claims of seven Polaroid patents" (A4) and stated that even though "it is well settled that the ultimate conclusion on obviousness" is one of law (A4), it had been Kodak's burden at trial to prove "by clear and convincing evidence facts requiring a conclusion that one of ordinary skill would have found the claimed invention obvious at the time it was made" (A5). The role of legal standards in reaching what was said to be a "legal conclusion" (A4) was not discussed. The court then held that to prevail on appeal Kodak had to "convince us" that "the judgment [of the district court] rests on such fundamental error as to compel reversal" (A5), and that Kodak had failed to do so (A6).

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*(footnote continued from preceding page)*

appeal from the grant of the injunction with respect to the five unexpired patents under § 1292(c)(1).

Polaroid did not appeal from those aspects of the district court's decision adverse to it.

The court of appeals' holding was based on a review of the conclusions of the district court without mention of this Court's applicable decisions. In the course of this review, the court of appeals, as had the district court, distinguished prior art if it was for use outside the specific field of integral instant color photography (*see, e.g.*, A9, 25, 30, 36-37), and held combinations of prior art elements patentable on the ground that the prior art did not suggest its own combination (A35).

## Reasons for Granting the Petition

### I.

### This Case Presents Substantial Questions of Public Importance Regarding the Patent System.

The proper administration of the patent system established by Congress pursuant to the Constitution is of considerable importance to the healthy functioning of the Nation's economy. This Court has always recognized that monopoly is a condition generally antithetical to our society, *see, e.g., John Deere,* 383 U.S. at 5-10, and that the limited exception permitted by the patent clause for "inventions and discoveries which furthered human knowledge, and were new and useful," *id.* at 9 (citing the views of Thomas Jefferson), must be carefully confined to avoid "remov[ing] existent knowledge from the public domain," a result forbidden by the patent clause itself, *id.* at 6. It is the ultimate responsibility of the courts "to give effect to the constitutional standard" by "strict observance of the requirements" for patentability "laid down" by this Court. *See id.* at 6, 18-19.

The court of appeals here adopted procedures governing the adjudication of patent cases that foreclose proper judi-

cial inquiry into the constitutional requirement of invention or discovery (see Point II below). The court's substantive rulings on "nonobviousness," the statutory corollary of "invention," *John Deere,* 383 U.S. at 13-17, disregarded this Court's unequivocal instruction that the mere combination of known art or the application of known technology to meet an additional need is not invention (see Point III below). The result is bad law and bad policy: the constitutional limitation on patentability is abridged and existing knowledge is monopolized.

In this case, moreover, a monopoly of a whole segment of an industry has been extended to nearly half a century by force of law. Of the six "inventions" here in issue, five are the second or third generation of applications based on earlier Polaroid patents. Such pyramiding of "invention" by successive applications of old art to new generations of products is totally inconsistent with the constitutional requirement that patent monopolies be "for limited times."

The immediate and direct effect of the court of appeals' decision was to require Kodak to close its instant photography business, eliminating hundreds of jobs, depriving American consumers of film for more than 16,000,000 Kodak instant cameras already sold, and precluding any choice for future buyers of instant cameras—a result all the harsher since Kodak's concentration on lower-priced cameras put instant photography within the means of millions of Americans who previously had been unable to afford it. The procedural and substantive standards applied by the court of appeals, however, have far broader implications than the destruction of Kodak's $200,000,000 instant photography business and foreclosure of choice to those who own or would buy Kodak instant cameras.

Twenty years ago this Court had already "observed a notorious difference between the standards applied by the

Patent Office and by the courts" and cautioned that the Patent Commissioner should "strictly adhere" to the Court's standards for patentability. *John Deere*, 383 U.S. at 18. At that time, the Court noted, the Patent Office was granting about 50,000 patents a year, over 50% of those sought. *See id.;* Commissioner of Patents & Trademarks, *1965 Annual Report* at 12-13 (1966). Last year, some 80,000 patents were granted by the Patent and Trademark Office, out of about 130,000 applications processed by 1400 patent examiners, a sharp increase in the number of approvals and an approval rate of over 60%.[5] Clearly, the hope the Court expressed in *John Deere* that new administrative procedures would be developed to "insure the strict application of appropriate tests of patentability," *id.* at 19 n.10, has not borne fruit.[6]

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[5] Commissioner of Patents & Trademarks, *1985 Annual Report* 19, 21, 44 (1986). About 45% of the total patents issued are now granted to foreign applicants, up from about 25% fifteen years ago. *Id.* at 21. The long-term consequences of this trend have broad implications for the economy. *See* McMahon, "Patents Better Protected, but Look Who's Getting Them," *Wall Street Journal*, March 4, 1986, at 30, col. 3.

[6] The patent examination process is not adversarial but *ex parte*, in fact, completely confidential. Based on the published statistics, an examiner can spend no more than 20 hours per application, and if the applications for the patents in suit are at all typical, that equates to less than two hours for reading and analyzing each double-columned page of technical and legal jargon in fine print, without allowing any time for searching and analyzing prior art.

Despite these public facts, the court of appeals held here, as it has previously, *e.g., American Hoist & Derrick Co.* v. *Sowa & Sons, Inc.*, 725 F.2d 1350 (Fed. Cir.), *cert. denied*, 105 S. Ct. 95 (1984), that patent examiners are presumed to have reviewed prior art not mentioned in the examiner's file history nor cited by the applicant (A12, 36, 40) and that an examiner's rejection of prior art was entitled to deference in the district court over and above the statutory presumption of patent validity (A9; *see* A22, 29, 36). Before the creation of the Federal Circuit, courts of appeals had

*(footnote continued on following page)*

At the same time, the check on the administrative process provided by the courts at the time of *John Deere* has substantially eroded in the four years since the creation of the Federal Circuit: while the eleven courts of appeals invalidated 66% of the patents challenged for obviousness during the four-year period 1979-1982, the Federal Circuit has in succeeding years invalidated only 46%.[7] As well as dramatically weakening the judicial check on administrative laxity, the Federal Circuit has directed the imposition of increasingly drastic remedies in infringement cases, including both the routine granting of preliminary injunctive relief and larger damage awards. *See* Foster, *The Preliminary Injunction—A "New" and Potent Weapon in Patent-Litigation,* 68 J. PAT. & TRAD. OFF. SOC'Y 281 (1986); *Fortune,* June 23, 1986, at 57; Chisum, *Remedies for Patent Infringement,* 13 AIPLA Q.J. 380 (1985).

If unchecked by this Court, these developments can only chill the use of innovative technology by those seeking to compete with the original entrant into any field. To the costs of research, development and tooling will be added the expense of fighting charges of infringement of dubious patents and the risk of potentially catastrophic loss of investment and damage liability for "infringing" patents on

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*(footnote continued from preceding page)*

rejected the assumption that patent examiners had reviewed uncited prior art, had held that in such cases the presumption of validity was weakened, and had treated the question of obviousness as a legal issue fully reviewable by the courts. *See, e.g., Chicago Rawhide Mfg. Co.* v. *Crane Packing Co.,* 523 F.2d 452, 458, 460 (7th Cir. 1975) (Stevens, J.), *cert. denied,* 423 U.S. 1091 (1976); *Lorenz* v. *F.W. Woolworth Co.,* 305 F.2d 102, 105 & n.7 (2d Cir. 1962).

[7] The statistics for 1979-1982 were compiled by petitioner. The statistics for the Federal Circuit were calculated from 13 AIPLA Q.J. 185, 187 (1985). There is general appreciation of the fact of this change and its consequences in the business community. *See Dun's Business Month,* July 1986, at 32; *Fortune,* June 23, 1986, at 57; *New York Times,* January 21, 1986, at D2, col. 1.

"inventions" that fail to meet the constitutional standard of patentability. The Court should intervene now to review the marked departure from its decisions that threatens these severe consequences.

## II.

### The Decision Below Mistakenly Applied the Clearly-Erroneous Standard of Rule 52(a) to the Ultimate Question of Obviousness.

This case has one feature in common with *Dennison Mfg. Co., supra,* 106 S. Ct. 1578: in each the court of appeals strove with a singleness of purpose to hold the patents in suit valid. The means used here were, however, the converse of those in *Dennison,* for here the court of appeals treated the district court's factual findings as virtually dispositive without reference to this Court's decisions controlling the ultimate determination of obviousness. The Court thereby abdicated the judicial function and denied Kodak its right to appellate review of inventiveness and patent validity under the standard established by this Court. *See John Deere,* 383 U.S. at 17-19; *see also Sakraida* v. *Ag Pro, Inc.,* 425 U.S. 273, 279-80 (1976).

Moreover, the decision of the district court from which Kodak appealed, while replete with discussions of technical facts and evidence, itself fails to apply the controlling decisions of this Court on obviousness and patentability to those facts. Instead of subjecting the district court's decision to careful analysis to determine whether the absence of articulated legal standards reflected a misapplication or unawareness of this Court's decisions, the court of appeals held that Kodak had the burden of proving obviousness as a factual matter by presenting clear and convincing evidence

(A5), and that the district court's decision could be overturned only for "such fundamental error as to compel reversal" (A5).

This Court's decisions are to the contrary: In both *John Deere* and *Great Atlantic & Pacific Tea Co.* v. *Supermarket Equipment Corp.*, 340 U.S. 147 (1950) (*"A&P"*), this Court reached its own conclusion with respect to obviousness or invention without reference to the clearly-erroneous standard (much less a test of "such fundamental error as to compel reversal"), and in *A&P* it explicitly rejected application of the "two-court rule" to the ultimate conclusion reached below. *Id.* at 153-54.

"Rule 52(a) does not inhibit an appellate court's power to correct errors of law, including those that may infect a so-called mixed finding of law and fact, or a finding of fact that is predicated on a misunderstanding of the governing rule of law." *Bose Corp.* v. *Consumers Union of United States, Inc.*, 466 U.S. 485, 499-501 (1984); *cf. Miller* v. *Fenton*, 106 S. Ct. 445 (1985); *Baumgartner* v. *United States*, 322 U.S. 665, 670-71 (1944). Thus, the rule does not sanction the failure by the court of appeals to correct the legal standards used by the district court to determine whether an "invention" was obvious, even though the "clearly-erroneous" standard set forth in the rule applies to the subsidiary factual determinations with which the obviousness inquiry begins, *see Dennison Mfg. Co., supra*, 106 S. Ct. at 1579.

The court of appeals' failure to review and apply the governing substantive law was compounded in this case by its sanctioning of the district court's admitted reliance on improper factors in reaching its conclusions. The district court explicitly stated that it had weighed against Kodak both its examination of Polaroid's SX-70 cameras and film and its admonition that research scientists and engineers should

refer patent questions to patent lawyers.[8] As a matter of law, since there was not (and could not have been) a finding that Kodak had copied any Polaroid product, neither of the conduct factors relied on by the district court has any bearing on any factual or legal issue with respect to validity or infringement, and had a jury been instructed that it *might* consider them a new trial would have been required.[9] Yet in the face of the trial judge's statement that these factors *had* borne on her decision, the court of appeals dismissed Kodak's contention of error without discussion and in a single Orwellian sentence, which both confused the issue and denied the fact of the district court's own printed words: "The assertion that the trial judge was influenced by preconceptions of Kodak's culpability is unworthy of comment" (A7).[10]

The court of appeals erred in tolerating procedural error, in failing to apply, or even to discuss, the decisions of this Court, and in relying on the clearly-erroneous standard

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[8] The district court's reference to the second factor was not only misplaced in concept but prejudicially incomplete as a matter of indisputable fact. See page 8 and note 3 above.

[9] Indeed, the examination of Polaroid's products is conduct encouraged, not foreclosed, by the patent laws. *See, e.g., Schriber-Schroth Co.* v. *Cleveland Trust Co.*, 311 U.S. 211, 214 (1940); *General Electric Co.* v. *Wabash Appliance Corp.*, 304 U.S. 364, 369 (1938); *Permutit Co.* v. *Graver Corp.*, 284 U.S. 52, 60 (1931); *Merrill* v. *Yeomans*, 94 U.S. 568 (1876). Likewise, the Federal Circuit requires any person with notice of possible infringement "to seek and obtain competent legal advice from counsel." *Kloster Speedsteel, AB* v. *Crucible, Inc.*, 32 Pat. Trademark & Copyright J. (BNA) 215, 216 (Fed. Cir. 1986).

[10] Kodak did not accuse the district court of bias; it simply complained that the court had expressly given weight to factors entitled as a matter of law to no weight and asked the court of appeals to require a decision free of such error. That is a fundamental appellate function, and the court of appeals' utter refusal to perform it is a marked departure "from the accepted and usual course of judicial proceedings." *See* Rule 17.1(a).

to preclude full appellate review of such questions as the significance of prior art not directly developed for use in integral instant color products (A25, 28, 30, 36) and whether a combination of old elements is obvious (A35-36). Here the court's procedures resulted in an evasion of this Court's substantive decisions, *see A&P*, 340 U.S. at 149-54;[11] were such an approach to become accepted procedure in all cases, and not simply a means of affirming decisions in favor of validity, there would be as many standards of patentability as there are district judges, the reasonable predictability that is vital to the conduct of commerce would not exist, and Congress's purpose in creating the Federal Circuit would be wholly frustrated.

## III.

### The Decision Below Is in Conflict With This Court's Decisions.

Four of the six "inventions" held patentable below ('821, '165/'262, '540, and '392) involve no more than the application of known elements of prior art to meet the particular needs of integral instant color photography. They are clearly invalid as a matter of law under this Court's decisions specifically requiring strict scrutiny of combination

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[11] The court of appeals' refusal to review the district court's conclusions is most glaring in its treatment of the district court's erroneous assertion that the '165/'262 patent claimed "separate black-and-white layers." After agreeing with Kodak that the patents contain no such claim (A24), and reluctantly admitting that the district court relied on this erroneous determination in rejecting Kodak's argument that the "invention" was obvious (A24), the court of appeals neither remanded this aspect of the case for reconsideration by the district court nor undertook its own determination of obviousness. Rather, it baldly asserted that the district court had not "overemphasized that element" enough to warrant reversal (A25), even though the district court had held that separate black-and-white layers "constitutes a significant difference" from the prior art (A83).

patents and mandating in all cases a broad view of prior art. The patents covering the other two "inventions" ('789 and '211) are either invalid on grounds of anticipation or obviousness or are not infringed, since Kodak practiced prior art, not the alleged "inventions."

A. To obtain a patent for an "invention" consisting of an aggregation or combination of old parts or elements, the patentee must meet a standard of inventiveness explicitly set forth by this Court. *See Sakraida* v. *Ag Pro, supra,* 425 U.S. at 281; *A&P,* 340 U.S. at 152-53. Such a combination is not patentable unless it performs a "new or different function." *Sakraida, supra,* 425 U.S. at 282; *Anderson's-Black Rock, supra,* 396 U.S. at 61; *A&P,* 340 U.S. at 152-53; *Lincoln Engineering Co.* v. *Stewart-Warner Corp.,* 303 U.S. 545, 549 (1938). A patent for the combination of old elements with "no change in their respective functions . . . obviously withdraws what already is known into the field of its monopoly and diminishes the resources available to skillful men." *A&P,* 340 U.S. at 152-53. To gain a patent "[m]ore must be done than to utilize the skill of the art in bringing old tools into new combinations." *Cuno Engineering Corp.* v. *Automatic Devices Corp.,* 314 U.S. 84, 89 (1941).

Accordingly, this Court has directed lower courts to "scrutinize combination patent claims with a care proportioned to the difficulty and improbability of finding invention in an assembly of old elements." *A&P,* 340 U.S. at 152. The Federal Circuit has consistently taken quite a different view, stating that there "is no basis in the law . . . for treating combinations of old elements differently in determining patentability," *Fromson* v. *Advance Offset Plate, Inc.,* 755 F.2d 1549, 1556 (Fed. Cir. 1985), and even that "[r]eference to 'combination' patents is . . . meaningless," *Stratoflex Inc.* v. *Aeroquip Corp.,* 713 F.2d 1530,

1540 (Fed. Cir. 1983). *See Connell* v. *Sears, Roebuck & Co.*, 722 F.2d 1542, 1548-49 (Fed. Cir. 1983); *Environmental Designs, Ltd.* v. *Union Oil Co.*, 713 F.2d 693, 698 (Fed. Cir. 1983), *cert. denied*, 464 U.S. 1043 (1984). The Federal Circuit's refusal to scrutinize combination patents strictly is a departure not only from the clear mandate of this Court, but also from the uniform position of all eleven courts of appeals before the creation of the Federal Circuit.[12]

In this case, neither the Federal Circuit nor the district court adhered to this Court's decisions:

*'165/'262*—Prior art patent '645 disclosed every pertinent feature of '165/'262 except for use of an opaque processing fluid instead of an opaque flap (*see* A24-25, 82-84), and that substitution was specifically and expressly taught by prior art patent '659 (JA 10,970). This fact rendered '165/'262 invalid under the express holding of *John Deere*, 383 U.S. at 31. The court of appeals nonetheless held the patent valid because '645 did not use an opaque processing fluid and '659 did not disclose the *other* features of '165/'262 (A25). Under this reasoning *any* new combination of prior art elements would be an invention—a result clearly not contemplated or sanctioned by this Court.

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[12] *Sylvania Elec. Prods., Inc.* v. *Brainerd*, 499 F.2d 111, 112 (1st Cir. 1974); *Supreme Equip. Sys. Corp.* v. *Lear Siegler, Inc.*, 495 F.2d 860, 862 (2d Cir. 1974); *Henkels & McCoy, Inc.* v. *Elkin*, 455 F.2d 936, 936-37 (3d Cir. 1972); *Blohm & Voss AG* v. *Prudential-Grace Lines, Inc.*, 489 F.2d 231, 237 (4th Cir. 1973), *cert. denied*, 419 U.S. 840 (1974); *Sterner Lighting, Inc.* v. *Allied Elec. Supply, Inc.*, 431 F.2d 539, 542 (5th Cir. 1970), *cert. denied*, 401 U.S. 909 (1971); *Shatterproof Glass Corp.* v. *Guardian Glass Co.*, 462 F.2d 1115, 1123 (6th Cir.), *cert. denied*, 409 U.S. 1039 (1972); *Henry Mfg. Co.* v. *Commercial Filters Corp.*, 489 F.2d 1008, 1014 (7th Cir. 1972); *John Blue Co.* v. *Dempster Mill Mfg. Co.*, 275 F.2d 668, 671 (8th Cir. 1960); *Hewlett-Packard Co.* v. *Tel-Design, Inc.*, 460 F.2d 625, 629 (9th Cir. 1972); *Scaramucci* v. *Dresser Indus., Inc.*, 427 F.2d 1309, 1313-14 (10th Cir. 1970); *Blair* v. *Dowd's Inc.*, 438 F.2d 136, 137 (D.C. Cir. 1970).

*'821*—The use of an acid layer to reduce alkalinity in instant film units after development and thereby stabilize the image had been known for over ten years before '821 was filed (A59-60). Likewise, the structure of an instant color film unit was well known prior art (A55-56). The claimed "invention" of '821 was merely the combination of such a layer for such a purpose with the other elements of an instant color film unit and thus was no invention at all.

*'540*—Prior art taught the use of polyester as a film support in instant film (A107), the use in integral instant films of supports made from identical materials for "greater resistance to curling" ('342) (A28, 107), and the use of two supports in an integral instant color film with a structure "like that of '540" ('606) (A107). To one skilled and knowledgeable in the art applicable to photography, it was obvious to use polyester for supports, obvious to use two identical supports, and obvious to combine those two polyester supports with the film structure disclosed in the prior art. Instead of determining whether '540 "combined ordinary elements in an extraordinary way," *Deepsouth Packing Co.* v. *Laitram Corp.*, 406 U.S. 518, 521 (1972), both lower courts attempted only to distinguish each element of the prior art without considering whether other art taught what was missing from any one reference (A28-31, 107-10).

*'392*—The court of appeals refused to combine "individual elements from three prior patents and thereby recreate the invention claimed in the '392 patent" on the stated ground that the prior patents did not themselves suggest their own combination (A35). That holding is directly contrary to *Cuno Engineering Corp., supra,* 314 U.S. at 89. The prior art need not suggest its own com-

bination; instead, its combination must only be obvious to one skilled and knowledgeable in the art. *Id.*

This Court mandated " 'strict observance' " of the constitutional standard of invention in cases involving combination patents. *Anderson's-Black Rock, supra,* 396 U.S. at 61-62 (quoting *John Deere,* 383 U.S. at 18). The Federal Circuit has refused to adhere to that standard, necessitating review by this Court. *See* Harris, *Prospects For Supreme Court Review of the Federal Circuit Standards for Obviousness of Inventions Combining Old Elements,* 68 J. PAT. TRAD. OFF. SOC'Y 66 (1986).

B. In *John Deere* this Court noted the explosion of technology in this century—an explosion that has grown geometrically since—and called the attention of the courts, the Patent Office and putative inventors to the overriding fact that "the ambit of applicable art in given fields of science has widened by disciplines unheard of a half century ago." *Id.* at 19. The courts below, in contrast, did not treat the question before them as whether an application of prior art would have been obvious to one familiar with the body of scientific and engineering knowledge applicable to the chemistry and mechanics of photography, and instead placed great emphasis on the mere priority of application of that knowledge to the specific field of "integral instant color photography." The court of appeals disregarded the overriding historical fact emphasized by this Court in *John Deere,* and manifested no awareness of its particular responsibility to ensure that the standard of patentability is consistent with the constitutional mandates of this Court.

This Court has required that prior art be considered broadly and as a whole, *e.g., Dann* v. *Johnston,* 425 U.S. 219, 228-30 (1976), and has held uniformly that the mere application of old processes or art to solve a new

but analogous problem does not constitute a patentable invention even if the prior art is adapted to meet the specific requirements of a new subject matter. *See Jungerson* v. *Ostby & Barton Co.*, 335 U.S. 560, 566-67 (1949); *Dow Chemical Co.* v. *Halliburton Oil Well Cementing Co.*, 324 U.S. 320, 327 (1945); *Paramount Publix Corp.* v. *American Tri-Ergon Corp.*, 294 U.S. 464, 473 (1935); *see also Mandel Bros., Inc.* v. *Wallace*, 335 U.S. 291, 294-96 (1948); *Cuno Engineering Corp., supra*, 314 U.S. at 88-89; *Lincoln Engineering Co., supra*, 303 U.S. at 550-51; *Concrete Appliances Co.* v. *Gomery*, 269 U.S. 177, 184-85 (1925); *Vandenburgh* v. *Truscon Steel Co.*, 261 U.S. 6, 15 (1923); *Mast, Foos & Co.* v. *Stover Mfg. Co.*, 177 U.S. 485, 492-94 (1900). Were this not so, the use of known scientific and engineering principles would become subject to statutory monopoly in each new application, thereby removing existent knowledge from the public domain in contravention of the Constitution. *See Anderson's-Black Rock, supra*, 396 U.S. at 61.

The courts below paid no heed to these fundamental legal principles. Rather, the district court ignored the forest of the law for the trees, branches and leaves of technical minutiae, focusing on the specifics of "integral instant color" photography, and the court of appeals took no broader view:

*'821*—The use of a polymeric acid layer to reduce the pH and stabilize the image in sepia instant film was rejected as prior art because "of the essential differences between the processes for sepia and color" (A61). The essence of the "invention" of the acid layer, however, was merely to reduce the alkalinity of the processing fluid, in sepia, color, or any other instant film. The modifications required to meet the timing requirements of color instant film (A55-56) were

mechanical adjustments, not invention, and were never even claimed as an invention. Under the lower courts' reasoning the use of rubber tires on an automobile is not prior art for the use of rubber tires on a motocycle because of the "essential differences" between automobiles and motorcycles that may require smaller tires or greater air pressure.

*'165/'262*—The use of an opaque processing fluid to serve as one wall of the "darkroom" in earlier instant films was rejected as prior art to '165/'262 because those films did not suggest the overall structure of the integral instant color film unit disclosed in '165/'262 (A84-85), even though virtually the same structure had already been disclosed in another Polaroid prior art patent (A82-83).

*'540*—Polyester was widely used as a support material in the manufacture of photographic film from the time of its availability and its properties, including "optical clarity, durability, dimensional stability and low moisture sensitivity" were well known (A105). The notion that its use in place of cellulose acetate as "symmetrical supports" (*i.e.*, on both sides of a film unit, as required with integral instant film, rather than on one side only) was an invention (A105-08) is simply ludicrous, as the court of appeals appears to have recognized (A29) but did not follow to its logical conclusion, invalidity. *See Sinclair & Carroll Co.* v. *Interchemical Corp.*, 325 U.S. 327, 335 (1945); *Hotchkiss* v. *Greenwood*, 52 U.S. 248 (1850).[13]

*'392*—The use of hooks, levers, "picks" and "fingers" to push and pull is as old as human use of mechanical prin-

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[13] The district court's reliance on the fact that Kodak tested "more than 600 different support materials" (A109) in an effort to find one better than polyester, the obvious choice with which it had started its testing (JA 2631, 2640-42), before returning to that obvious choice when it had solved other problems (JA 13,283-85), was itself reversible error, but ignored by the court of appeals.

ciples; the use of such devices in cameras and card machines to push film or cards is itself decades old (*see* A123-28). The particular devices embodied in the prior art, which were of course tailored to suit their own specific functions (*see* A124-28), were held inapposite merely because as so tailored they would not have worked "in the context of the entire film transport unit and the demands of an instant camera" (A126).[14] The refusal of the lower courts to recognize that prior art developed outside integral instant color photography could be adapted in an obvious way to meet the new problems created by that field was legal error. *See, e.g., Cuno Engineering Corp., supra,* 314 U.S. at 88-92.

The courts must in every case be guided by this Court's holdings that prior art includes the full scope of scientific and engineering knowledge available to one skilled in the art and is not limited to that which has already been applied to the new product being developed. If they are not, the obviousness inquiry under § 103 will become almost subsumed in the much narrower anticipation inquiry under § 102, and companies will rush to patent every conceivable application of old art to new products. This Court should require compliance with its consistent holding that one "who is merely the first to utilize the existing fund of public knowledge for new and obvious purposes" is not entitled to a patent monopoly, but "must be satisfied with whatever fame, personal satisfaction or commercial success he may be able to achieve," *Dow Chemical Co.* v. *Halliburton Co., supra,* 324 U.S. at 328.

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[14] In fact Polaroid prior art patents '452 and '370 related to instant cameras, but were rejected as prior art because the rear pick they disclosed "does not push the film into the rollers for spreading purposes" (A125). Spreading, however, is not a function of the pick but of the rollers, as the quoted statement itself indicates.

C. Since it is the claim that defines the invention,[15] it is error for a court either to narrow the claim in order to avoid prior art or to broaden the claim to find infringement. *See A&P*, 340 U.S. at 149-50; *Dow Chemical Co., supra*, 324 U.S. at 328-29; *General Electric Co., supra*, 304 U.S. at 374-75; *Lincoln Engineering Co., supra*, 303 U.S. at 550; *Altoona Publix Theatres, Inc., supra*, 294 U.S. at 487; *McClain* v. *Ortmayer*, 141 U.S. 419, 423-25 (1891); *White* v. *Dunbar*, 119 U.S. 47, 52 (1886). Likewise, if the claimed invention is narrowed in order to distinguish it from prior art it cannot later be expanded to cover what was previously eliminated, *see John Deere*, 383 U.S. at 33-34. In short, it must be construed consistently for purposes of infringement and patentability. *Smith* v. *Hall*, 301 U.S. 216, 232 (1937).

The requirement of reading narrow claims narrowly for infringement purposes protects the public against efforts to preempt and monopolize a field of knowledge by patenting minor advances. *See Lincoln Engineering Co., supra*, 303 U.S. at 547-50. An owner of a patent cannot extend his patent monopoly merely by improving one element of an old invention, and instead is entitled at most to limited patent protection if the improvement itself is sufficiently inventive. *Bassick Mfg. Co.* v. *R.M. Hollingshead Co.*,

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[15] A patent application must contain a "specification" that describes the alleged invention and concludes "with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention." 35 U.S.C. § 112. The "claims" define the extent of the patent monopoly accorded a legitimate invention. *E.g., General Electric Co., supra*, 304 U.S. at 369; *Altoona Publix Theatres, Inc.* v. *American Tri-Erquon Corp.*, 294 U.S. 477, 487 (1935).

The purpose of claims is to give notice of the scope of the claimed monopoly. If the monopoly is not restricted to the claim, there is no way for the public to determine its scope short of litigation entailing potentially catastrophic exposure.

298 U.S. 415, 424-25 (1936); *see also Textile Machine Works* v. *Louis Hirsch Textile Machines, Inc.*, 302 U.S. 490, 497 (1938); *Electric Cable Joint Co.* v. *Brooklyn Edison Co.*, 292 U.S. 69, 79 (1934).

In the case of *'789*, the court of appeals chose to disregard these settled principles. To avoid invalidating '789 on the basis of Kodak's own prior art disclosing a two-step negative dye-release process, the court of appeals endorsed the district court's reading of Polaroid's negative dye developer claim in '789 as a "one step" process (A17). Both courts then expanded that claim on infringement to cover Kodak's two-step process, which practiced not Polaroid's "invention" but Kodak's own prior art altered by increasing alkalinity to speed up the reactions—a process not only common in instant photography, but known to high school chemistry students. Either '789 is invalid as anticipated by or obvious from Kodak's own negative dye-release prior art or it is not infringed by Kodak's practice of that prior art.

Similarly, the supposed "invention" patented in *'211* was a camera that bends the film unit as it exits the camera. The patent claims *only* the structure of the exit, and *not* the benefits of bending. (In fact, Polaroid had abandoned any claim to one asserted benefit of bending, better control of the spreading of processing fluid (A141 n.39).) Despite the similarities between the structure of the exit claimed by the '211 patent and the structure of the exit disclosed in the prior art '619 patent, the lower courts did not find anticipation, citing newly discovered "benefits" of the old structure (A38-40, 135-36). Then, in finding infringement, the courts held that any bending of the film unit in an integral instant camera infringed the '211 patent, whatever the degree of bending (A41-42, 140-42). Polaroid thereby managed to remove from available instant camera technology

and arrogate to itself the known art of bending the film unit as it exits the camera.

By reading the claims of Polaroid's patents narrowly to avoid prior art, and requiring exact identity of structure and function in determining both obviousness and anticipation, the court of appeals sanctioned the grant of the patent monopoly for minor variations of old art. By construing the same claims broadly to find infringement, the court precluded Kodak from practicing that prior art. As a result, although the court adverted to this Court's ruling nearly a century ago that " 'that which infringes, if later, would anticipate, if earlier,' " *Peters* v. *Active Mfg. Co.*, 129 U.S. 530, 537 (1889), it failed to follow that maxim.

D. Each patent granted withdraws a certain amount of technology from the public domain—a result entirely proper if, but only if, the constitutional requirement of "invention" is met. Should the courts not safeguard that standard, as required by this Court's decisions for over a century, the patent system will choke, not foster, scientific development and the competitive employment of its fruits for the benefit of all. The decision below perpetuates monopoly without invention and thereby conflicts with the controlling decisions of this Court. Review is necessary to require adherence to the constitutional standards as explained by this Court.

## Conclusion

For the reasons stated, a writ of certiorari should issue to review the judgment of the United States Court of Appeals for the Federal Circuit.

Respectfully submitted,

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July 23, 1986

# APPENDIX

## Opinion of the Court of Appeals, April 25, 1986

UNITED STATES COURT OF APPEALS
FEDERAL CIRCUIT

Appeal No. 86-604.

April 25, 1986.

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POLAROID CORPORATION,

*Plaintiff-Appellee,*

v.

EASTMAN KODAK COMPANY,

*Defendant-Appellant.*

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Francis T. Carr, Kenyon & Kenyon, New York City, argued, for defendant-appellant. With him on brief, were Kenneth E. Madsen, James Galbraith and Walter E. Hanley, Jr.

Herbert F. Schwartz, Fish & Neave, New York City, argued, for plaintiff-appellee. With him on brief, were Kenneth B. Herman, Edward F. Mullowney, Patricia A. Martone, Richard M. Barnes, Robert J. Goldman, and Kevin J. Culligan.

Before MARKEY, Chief Judge, SMITH and NEWMAN, Circuit Judges.

MARKEY, Chief Judge.

Eastman Kodak Company (Kodak) appeals from a judgment of the United States District Court for the District of Massachusetts (Zobel, J.), holding claims of seven patents issued to Polaroid Corporation (Polaroid) valid and in-

fringed. 228 USPQ 305, 344 (D. Mass. 1985). We affirm the appealed portions of the judgment in all respects.

## *I. Background*

Polaroid sued Kodak on April 26, 1976 for infringement, 35 U.S.C. § 271(a), and for actively inducing infringement, 35 U.S.C. § 271(b), of ten Polaroid patents. The complaint requested issuance of temporary and permanent injunctions, treble damages, costs, and attorney fees.

Over the next five years, the parties participated in pretrial conferences, filed numerous motions, and engaged in extensive discovery, accounting for more than one thousand entries in the district court's certified docket.[1] Between October 5, 1981 and February 26, 1982, the district court conducted seventy-five days of trial. On October 11, 1985 the district court issued its judgment: (1) holding that Kodak had failed to carry its burden of proving facts requiring a holding of invalidity of the asserted claims of seven patents;[2] (2) finding certain claims infringed; (3) holding claims of five patents invalid, but if valid, infringed; and (4) granting a permanent injunction that would become effective on January 9, 1986.[3] On November 4, 1985,

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[1] Kodak cited in its § 282 notice 137 prior patents in relation to the seven patents now on appeal. It relied on 62 of those references at trial. On appeal, it relies on 20 of those 62.

[2] Patents being presumed valid, 35 U.S.C. § 282, a holding that the accused infringer "failed to carry its burden" is preferred over a holding that a patent "is valid". *See Lindemann Maschinenfabrik GmBH* v. *American Hoist & Derrick Co.*, 730 F.2d 1452, 1457 n.1, 221 USPQ 481, 484 n.1 (Fed. Cir. 1984).

[3] The district court reserved for post-trial proceedings Polaroid's allegations on willful infringement and increased damages, 35 U.S.C. § 284, and both parties' demands for attorney fees, 35 U.S.C. § 285. 228 USPQ at 306 n.2. Those issues are not before us.

Kodak moved this court, pursuant to Fed. R. App. P. 8(a), to stay the injunction, pending completion of its appeal. Following briefing and oral argument on January 6, 1986, this court denied that motion.

Kodak appeals from certain portions of the judgment: that it had failed to carry its burden respecting validity of seven patents;[4] and from the judgment that it had infringed certain claims;[5] and that Patent No. 3,753,392 is not unenforceable. Polaroid has not cross-appealed the judgment that claims of five of its patents are invalid.

## *II. The District Court's Memorandum Decision*

With her judgment, the trial judge issued a comprehensive, 122-page Memorandum Decision, in which she exhaustively articulated the parties' contentions, including each of Kodak's myriad defenses. Incorporating her fact findings and legal conclusions, she delineated the evidence and testimony introduced at trial and noted her credibility determinations. The Memorandum Decision reflects the district court's grasp of the involved technology and a correct application of the patent law to the facts found in what was at the trial stage a more complex case than even that presented on this appeal.

The Memorandum Decision of the trial judge makes it unnecessary to set forth here the relationships and events

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[4] United States Patents No. 3,362,821 (issued January 9, 1968); No. 3,245,789 (issued April 12, 1966); No. 3,594,165 (issued July 20, 1971); No. 3,689,262 (issued September 5, 1972); No. 3,578,540 (issued May 11, 1971); No. 3,753,392 (issued August 21, 1973); No. 3,810,211 (issued May 7, 1974).

[5] Claim 1 of U.S. Patent No. 3,362,821; Claims 5, 6, 7, 8, and 9 of U.S. Patent No. 3,245,789; and Claim 8 of U.S. Patent No. 3,810,211.

involving the parties or the developmental history of the technology, all of which the reader of this opinion may obtain from the reports of the Memorandum Decision cited here at the outset.[6]

## *III. Issue*

Whether the district court committed reversible error in holding that Kodak had failed to carry its burden in respect of the validity of certain claims of seven Polaroid patents, or in finding some of those claims infringed by Kodak.

## *IV. Opinion*

### *Introduction*

Though it is not yet ended (*see* note 3, *supra*), this massive and complex litigation already spans almost a decade. Polaroid's amended complaint alleged infringement of forty-six claims of eleven patents. Kodak's answer and counterclaims asserted multiple theories of invalidity, unenforceability, and non-infringement. This court granted motions for extended briefs and the appendix before us contains 18,000 pages of testimony, documents, and exhibits.

### *(1) Standard of Review*

Kodak's primary thrust on appeal, as we shall see, is aimed at the obvious/nonobvious issue. Though it is well settled that the ultimate conclusion on obviousness is just that, a legal conclusion, *see Fromson* v. *Advance Offset Press, Inc.*, 755 F.2d 1549, 1555, 225 USPQ 26, 30 (Fed. Cir. 1984), that does not mean, as many of Kodak's arguments would imply, that we may proceed on a paper record

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[6] The trial court's Memorandum Decision discusses a number of patents not involved on this appeal.

as though no trial had taken place.[7] This court reviews judgments. *Id.* at 1556, 225 USPQ at 31 (Fed. Cir. 1984). Because we do not retry the case, Kodak must to prevail convince us that the judgment cannot stand on the record created at trial, i.e., that the judgment rests on such fundamental error as to compel reversal.

The statutory question under 35 U.S.C. § 103 is whether a claimed invention would have been obvious or nonobvious at the time it was made to one of ordinary skill in the art. That the question is "legal" does not mean that "to a judge" may be substituted for the statutory phrase "to one of ordinary skill in the art". Thus the obvious/nonobvious question is not answerable by a judge on the sole basis of what he or she thinks "ought" to be patentable under § 103. The trial judge, eschewing all personal predilections, must decide on the totality of the evidence whether the accused infringer has carried its § 282 burden of proving by clear and convincing evidence facts requiring a conclusion that one of ordinary skill would have found the claimed invention obvious at the time it was made. *Id.* at 1096, 227 USPQ at 346. The appellate judge, equally eschewing all personal predilections, must decide whether the trial judge's controlling fact findings are clearly erroneous, or whether on the controlling facts correctly found the trial judge's legal conclusion can or cannot stand. *Id.* at 1096-97, 227 USPQ at 346-47.

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[7] Many if not most of Kodak's obviousness arguments reflect the misperception that appellants have a right to re-try *de novo* the facts underlying the judgment on the § 103 issue, a course contrary to the rules and established parameters of appellate review and one we have declined to follow. *Fromson* v. *Advance Offset Press, Inc.*, 755 F.2d at 1555, 225 USPQ at 30; *Railroad Dynamics, Inc.* v. *A. Stucki Co.*, 727 F.2d 1506, 1513, 220 USPQ 929, 936 (Fed. Cir.), *cert. denied*, — U.S. —, 105 S. Ct. 220, 83 L. Ed.2d 150 (1984).

It is commonplace that findings other than those of the trial judge might find *some* support in the record, or that reviewing judges if sitting at trial *might* have reached such findings. It is therefore ineffective on appeal merely to present a scenario in which the trial judge could have gone appellant's way, *Anderson* v. *City of Bessemer City, N.C.*, — U.S. —, 105 S. Ct. 1504, 1512, 84 L. Ed.2d 518 (1985) ("where there are two permissible views of the evidence, the fact finder's choice between them cannot be clearly erroneous"). The rules governing appellate review thus require affirmance of judgments based on findings that were on the entire record made without the commission of reversible error. *See American Original Corp.* v. *Jenkins Food Corp.*, 774 F.2d 459, 462, 227 USPQ 299, 300 (Fed. Cir. 1985). Though seven patents are involved on this appeal, and we have carefully considered Kodak's arguments on each one, we have been shown no error that might compel us on this record to reverse the judgment or any appealed portion thereof.

The burden of overcoming the district court's factual findings is, as it should be, a heavy one. In reviewing a judgment based on those findings we do not perform as robed Examiners,[8] nor do we repeat the role of the trial judge in finding our own facts. *See Atlas Powder Co.* v.

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[8] In ex parte appeals from the United States Patent and Trademark Office (PTO), the record evidence often consists of only the claims and references, the PTO Board has dealt only with them, and further prosecution is possible on return of the file to the PTO. An appeal from a judgment of a district court, however, is quite another thing, a patent having issued, the claims being set, various additional segments of the statute being applicable, a great deal of evidence being often present, new facts and issues being involved, and the rules of the adversarial/judicial process having come into play.

*E.I. DuPont De Nemours & Co.*, 750 F.2d 1569, 1573, 224 USPQ 409, 411 (Fed. Cir. 1984).

*(2) Kodak's Contentions*

Kodak says the district court's findings and conclusions "are fatally flawed by systemic legal errors which permeate its approach to the issues of validity and infringement," supplying a list of six such errors:

> (1) At the outset, the district court allowed preconceptions of Kodak's culpability to influence its approach to the issues of validity and infringement;
>
> (2) The district court construed claims in a manner not consistent with the specifications and prosecution histories;
>
> (3) The district court, in considering non-obviousness of the claims, viewed the teachings of the prior art references in isolation, rather than together.
>
> (4) The district court repeatedly evaluated the scope of the claims in light of the accused structure or process, and in light of post-issuance, self-serving statements of the inventors; and
>
> (5) The district court required anticipating art to teach what the patent in suit teaches.
>
> (6) The district court made numerous "erroneous" findings of fact.

In proffering a total of eighteen arguments, Kodak variously applies items on the foregoing list to individual patents.

The assertion that the trial judge was influenced by preconceptions of Kodak's culpability is unworthy of comment.

That the remaining five assertions are without merit will be clear from our discussion of each of the seven patents involved in this appeal.

*(3) U.S. Patent No. 3,362,821*

Claim 1, the only claim of the '821 patent asserted, reads:

> 1. In a process of forming color transfer images wherein a photosensitive element is exposed, an alkaline processing composition is applied to said photosensitive element to effect development thereof and imagewise diffusion transfer of a dye image-forming substance from said photosensitive element to an image-receiving layer in superposed relationship therewith to form a positive dye image, the improvement wherein said photosensitive element contains a layer of a nondiffusible polymeric acid positioned between the support and the innermost layer containg said dye image-forming substance, said layer containing said polymeric acid containing sufficient acid groups to effect a reduction in the pH of the surface of said image-receiving layer of at least 2 pH units, as compared with the initial pH of said alkaline processing composition, prior to completion of the inhibition period.

The district court held that Kodak had not carried its burden of proving facts requiring a holding that claim 1 is invalid, and that Polaroid had proved that Kodak infringed claim 1 when it made, used, and sold its PR-10 film. 228 USPQ at 312-13.

*Validity*

First, Kodak says the district court misread claim 1 as including a limitation for "timing" drawn from the specification, and thus improperly distinguished the '821 patent over U.S. Patent No. 2,584,030 to Land ('030 patent). It says the district court was misled by testimony respecting Polaroid's attempts to perfect the timing of the pH drop which, "however important [those attempts] may have been commercially, ha[d] little to do with what is claimed in '821." Second, Kodak says a "staining problem" addressed in the '030 patent is the same problem addressed by the '821 acid layer, and its solution in '030 would have rendered claim 1 of '821 obvious. Third, Kodak asserts that Polaroid mischaracterized the '030 patent before the Examiner. And fourth, Kodak says the district court improperly relied on alleged "advantages" of the '821 acid layer to support patentability. Those arguments are without merit.

As the district court found, the '030 patent is drawn to processes for stabilizing sepia images. It is cited in the '821 patent among the references disclosed to the Examiner, and was fully discussed in Polaroid's remarks during prosecution. Kodak's burden in establishing invalidity is thus heavier: "[w]hen no prior art other than that which was considered by the PTO examiner is relied on by the attacker, he has the added burden of overcoming the deference that is due to a qualified government agency presumed to have done its job . . ." *American Hoist & Derrick Co.* v. *Sowa & Sons, Inc.*, 725 F.2d 1350, 1359, 220 USPQ 763, 770 (Fed. Cir.), *cert. denied*, — U.S. —, 105 S. Ct. 95, 83 L. Ed.2d 41, 224 USPQ 520 (1984).

*(a) "Timing"*

The record does not support Kodak's assertion that the district court read "limitations from the specification as well

as limitations from other claims" into claim 1. Kodak points to language in the Memorandum Decision discussing the invention of the '821 patent with respect to the specification's disclosure of "three different timing mechanisms". 228 USPQ at 311. Nothing in that discussion, however, supports Kodak's assertion that the district court introduced a "timing" limitation into claim 1 to distinguish over the '030 patent. The district court's remarks were there directed to Kodak's argument at trial that "the purpose of the ['821] acid layer is to neutralize the processing composition and thereby to prevent stain caused by oxidation of the developer." *Id.* In that context, the district court's reference to the '821 specification was entirely proper. *See ACS Hospital Systems, Inc.* v. *Montefiore Hospital*, 732 F.2d 1572, 1577, 221 USPQ 929, 932 (Fed. Cir. 1984). Moreover, the district court's § 103 analysis dealt specifically with the '030 patent and neither contains nor relies on a "timing" limitation in claim 1.

*(b) "Staining"*

Kodak's assertion that the invention set forth in claim 1 is directed to "staining problems" disclosed in the '030 patent is no more persuasive here than it was at trial. The district court expressly credited testimony of Polaroid's Dr. Land, and rejected Kodak's contention at trial that color and sepia diffusion transfer processes pose identical problems:

> To say, as did Dr. Trautweiler, that if one deletes the words "color" and "dye" from claim 1, one gets the process described by the '030 patent does not take sufficient account of the essential differences between the processes for sepia and color. Color diffusion transfer

> requires more time than the simpler silver transfer of sepia, and color requires the removal of the alkali metal ions from the environment of the image entirely. Neither these unique requirements of color, nor the mechanisms disclosed in '821 for meeting them, are disclosed in '030.

228 USPQ at 311.

Kodak simply ignores the district court's credibility determination and the quoted findings, arguing on appeal as though its "staining" contentions had been established as fact, and saying the person of ordinary skill would have known from the '030 patent that Polaroid's developers can cause staining problems. The argument must fail.

*(c) Mischaracterization*

Nothing of record supports Kodak's statement that, during prosecution, "[t]he sole distinction over '030 was the attorney's erroneous representation that '821 differed from '030 in the location of the acid layer . . ." The record clearly establishes that the opposite was true. In the specification, Polaroid disclosed that, like the '030 patent, the invention in the '821 patent:

> proposes to effect a neutralization of at least part of the residual alkali by employing a soluble substance of acid reaction. . . . There is a disclosure, however, in ['030] of the use of a polymeric acid such as cellulose acetate hydrogen phthalate, as a component of image-receiving elements effective to obtain pH reduction in silver transfer processes. The instant invention may be distinguished therefrom, among other ways, by the use of dye developers, the use of dyeable polymers

> as the image layer, and by the relatively thicker polymeric acid layers as compared with the image layer.

Col. 14, lines 2-17.

Though the Examiner initially rejected application claim 10 (claim 1) under § 103, he did not do so in view of the '030 patent. That reference was cited only with respect to application claims 12 (cancelled) and 18 (non-asserted claim 3). In respect of the later claim, the Examiner said "the function of the polymeric acid layer in either element is discussed or is inherent in ['030]." In response, Polaroid noted that the '030 patent was fully discussed in Polaroid's copending application Serial No. 234,864, also before the Examiner, which it incorporated by reference. Following Polaroid's remarks, the Examiner withdrew his rejection based on the '030 patent.

We reject Kodak's assertion that the Examiner applied the '030 patent only to claims "in which acid layers are placed in both the image receiving and photosensitive elements." That attempt to redefine the prosecution history is unavailing, where, as here, the whole reference was fairly before the Examiner. *Cf. Lear Siegler, Inc.* v. *Aeroquip Corp.*, 733 F.2d 881, 885-86, n.4, 221 USPQ 1025, 1029, n.4 (Fed. Cir. 1984).

In sum, Kodak has fallen far short of convincing us that the district court clearly erred in finding that "the '030 patent was unquestionably before the examiner," and that "Dr. Land and his attorney did not in any way misrepresent its significance." 228 USPQ at 312.

*(d) Advantages*

Kodak makes a general allegation that the district court improperly relied on "alleged advantages" of the acid layer of the '821 patent to support patentability, i.e., "luminosity", "mordant for alkali", etc. That the court mentioned

those advantages does not establish that it relied on them. The court's thorough analysis renders Kodak's allegation pure conjecture, a conjecture totally unsupported by any record reference that would indicate such reliance. The allegation deserves no further comment.

*Infringement*

Kodak attacks the district court's finding that it infringed claim 1 on two grounds, saying the district court erred in: (a) construing "photosensitive element" in claim 1; and (b) finding that the PR-10 film unit was "comprised of the same layers" as those in the '821 patent. Kodak's arguments rest on its own claim construction. The district court rejected that proffered construction and we agree.

*(a) Photosensitive Element*

The '821 specification discloses a "photosensitive element" comprising, in Figure 1: a support layer; a layer containing a nondiffusible acid-reacting reagent; a "spacer" layer; and layers containing dye developers and emulsions. The district court's use of "photosensitive element" is fully consistent with that disclosure. 228 USPQ at 312. Kodak's citation of its expert's testimony respecting the "ordinary meaning" of "photosensitive element" in no manner undermines the district court's judgment. That testimony was heard and weighed at trial. Faced with "conflicting definitions of 'photosensitive element' ", *id.*, the district court, having heard the witnesses, chose the definition she found in the specification. Kodak has shown no reason why this court should choose its definition over that chosen by the district court. Further, the district court correctly rejected Kodak's argument based on later-issued Polaroid patents

which allegedly used "photosensitive element" somewhat differently. That argument is irrelevant where, as here, the patentee's definition is sufficiently plain from the disclosure of the patent in suit as a whole. *Cf. Fromson* v. *Advance Offset Plate, Inc.*, 720 F.2d 1565, 1569, 219 USPQ 1137, 1140 (Fed. Cir. 1983).

*(b) Same Layers*

In attacking the district court's correlation of layers in its PR-10 film suit with those disclosed in the '821 patent, Kodak says "during processing [manufacture], a PR-10 film unit contains a layer of fluid processing composition between the cover sheet element (which contains the acid), and the IIR (the photosensitive element)."

Kodak's argument is thrice flawed. First, it assumes that Kodak's definition of what is, and is not, the "photosensitive element" is controlling. That assumption, as above indicated, is ill-founded. Second, as the district court correctly observed, claim 1 is directed to a *process* involving "a layer of nondiffusible polymeric acid" positioned "between the support and the innermost layer containing said dye image-forming substance." 228 USPQ at 312. The term "photosensitive element", as found by the district court, includes Kodak's acid layer (which Kodak coats on the "cover sheet element" before assembling the film unit), and thus necessarily embraces the layer of processing fluid. Third, as the district court correctly noted, apparatus distinctions not claimed are not controlling in determining infringement of process claims. *Amstar Corp.* v. *Envirotech Corp.*, 730 F.2d 1476, 1482, 221 USPQ 649, 653 (Fed. Cir.), *cert. denied*, — U.S. —, 105 S. Ct. 306, 83 L. Ed.2d 240 (1984). Nothing in Kodak's arguments convinces us of clear error in the district court's finding that, "regardless of

the manner of manufacture," the sequence of layers during practice of the claimed process invention "is comprised of the same layers depicted in Figure 1 of the patent and has the same structure described in claim 1." 228 USPQ at 312.

The district court's finding of infringement is fully supported by the record. As the district court correctly discerned, the "distinction" argued by Kodak is one without a difference.

*(4) U.S. Patent No. 3,245,789*

Independent claim 5 of the '789 patent, from which claims 6, 7, 8, and 9 depend, sets forth:

> 5. A process of forming a diffusion transfer image in color comprising the steps of exposing a photosensitive element including a support carrying a silver halide emulsion, applying to said exposed photosensitive element an aqueous alkaline solution and developing said exposed silver halide emulsion in the presence of a colored silver halide developing agent, said silver halide developing agent, upon oxidation, forming an oxidation product which is substantially more mobile and more diffusible in said aquous [sic] alkaline solution than is said silver halide developing agent, said oxidation product being colored and having a lower molecular weight than said silver halide developing agent, forming said more mobile oxidation product in developed areas of said exposed silver halide emulsion as a function of said development, and preferentially transferring, by diffusion, said more mobile oxidation product to a superposed image-receiving layer to impart thereto a visible color image which is a negative transfer image.

The district court held that Kodak had not carried its burden of proving facts requiring a holding that claims 5, 6, 7, 8, and 9 are invalid, and that Kodak had infringed those claims by making, using and selling its PR-10 film. 228 USPQ at 317.

*Validity*

Kodak says the process of its PR-10 film unit is the same as that disclosed in British Patent No. 840,731 and in three references based on inventions of K. E. Whitmore and P. M. Mader (Whitmore-Mader). *See* 228 USPQ at 315 & n.12. It says the district court erred in failing to hold the '789 patent invalid for anticipation or obviousness based on its finding that: (a) because Whitmore-Mader calls for a "subsequent treatment with . . . strong alkali," following oxidation, it is a two-step, rather than a one-step, process; and (b) Whitmore-Mader is of questionable utility and commercial value because of "disadvantages".

*(a) "One-step" vs. "Two Step"*

Kodak argues that Whitmore-Mader is not a two-step process, but merely requires two "sequential reactions" to release the dye, i.e., an oxidation of the quinoneimide, followed by hydrolysis. It says the district court confused those "two sequential chemical *reactions* with a two-step manipulative addition of reagents." (Emphasis in original). Thus, it asserts, one skilled in the art would have found it to have been obvious to practice Whitmore-Mader by making the alkaline processing liquid sufficiently strong so that any subsequent treatment with a "strong alkali" would have been unnecessary (i.e., that Whitmore-Mader either anticipated or would have suggested the "one-step" process of both the '789 patent and Kodak's PR-10 film).

Respecting the scope and content of the prior art, the district court found that: (1) the "splittable coupler process" of the British patent and the "deamination process" of Whitmore-Mader were "relatively slow" two-step processes; and (2) the oxidation and cleaving reactions of the PR-10 and '789 processes take place in the alkaline processing composition and occur essentially simultaneously (or, as Polaroid's expert witness Rogers put it, "in one fell swoop"), 228 USPQ at 316-17, making those processes "one-step" processes. On that basis, it further found that "both [PR-10 and '789] processes are fundamentally different from those described in the prior art." *Id.* at 317.

We have been shown no basis for reversing those findings, which are fully supportive of the district court's finding that no reference anticipated the claims in suit. Nor have we been shown a basis for overturning its conclusion that the prior art references, read as a whole, would not have taught or suggested, i.e., rendered obvious, the inventions set forth in claims 5, 6, 7, 8 and 9. *Id.* Kodak's assertions viewed in light of the undisturbed findings of record, form no basis for reversal. Those same assertions were made to and were convincingly rejected by the district court, whose findings, based on the testimony and evidence before it, have not been shown to have been clearly erroneous.

*(b) "Disadvantages"*

We need not consider Kodak's assertions respecting the district court's remark, 228 USPQ at 317, that Whitmore-Mader's process was of questionable utility and had disadvantages. Nothing in that remark indicates reversible error in the district court's findings applicable to its determination that Kodak failed to meet its burden respecting

validity of the '789 patent. *See Richdel* v. *Sunspool*, 714 F.2d 1573, 1580, 219 USPQ 8, 12 (Fed. Cir. 1983).

*Infringement*

Kodak says the district court erred in finding that the process of its PR-10 film unit uses: (a) a "colored silver halide developing agent" (CSHDA) as set forth in claim 5; and (b) an "oxidation product" within the meaning of that claim.

*(a) CSHDA*

Noting that claim 5 calls for a *"colored* silver halide developing agent", Kodak argues that the only compound in PR-10 capable of developing silver halide, and which does in fact develop silver halide, is the B & W developer. It says its process avoids infringement because its B & W developer is colorless, and thus is not a CSHDA because it does not meet the "colored" requirement of claim 5.

In rejecting the same argument raised at trial, the district court said Kodak's noninfringement analysis was based on "a strained and narrow" reading of the '789 claims that hinged on the terminology Kodak selected to describe the respective processes, and, because those terms were inaccurate, Kodak's argument failed. 228 USPQ at 316. We agree.

In response to Kodak's contention that CSHDA's are compounds "which *can and do*" develop silver halide (and which consequently must be mobile), the district court noted that claim 5 called for development of silver halide not *by* but "in the presence of" a negative dye developer. 228 USPQ at 316. It found that Polaroid's auxiliary developer (which it found the same as Kodak's B & W

developer) functioned as an "election transfer agent" that moved back and forth between the layers of dye developer and silver halide, oxidizing the former and reducing the latter. *Id.* at 316-17. It also found that Kodak's "dye releasers", i.e. sulfonamidonaphthols, were in reality another species of negative dye developer which did not differ in reaction from Polaroid's dye developers. *Id.* at 317.

Though Kodak urges on appeal that we hold the district court's construction of the term "developing agent" to have been contrary to the disclosure of the '789 patent, we have been shown no compelling basis for doing so. The '789 specification discloses use of a silver halide developing agent "which is also a dye and which yields an oxidation product which is more diffusible than the unoxidized portion thereof." Col. 2, 11. 50-52. That disclosure of a relatively non-diffusible CSHDA is consistent with the district court's determination that "the patent does not require either explicitly or implicitly, that the dye developer be mobile before oxidation." 228 USPQ at 316.

Statements made by Polaroid during prosecution of U.S. Patent No. 2,983,606 (of which '789 was a continuation in part) with respect to *positive* dye developers have not, on the record before us, been shown sufficiently material to require a different conclusion.

Kodak acknowledges that '789 contemplates use of an auxiliary dye developer, but asserts that the district court's infringement analysis improperly converted such "optional" use to an "essential" of the invention. We have been shown no compelling basis "in light of the claim language, the other claims, the prior art, the prosecution history, and the specification," *SRI International, Inc.* v. *Matsushita Electric Corp.*, 775 F.2d 1107, 1118, 227 USPQ 577, 583 (Fed. Cir. 1985) (in banc), for holding the district court's infringement finding clearly erroneous.

We see no merit in Kodak's assertion that the district court "remade" the CSHDA element in the '789 invention in light of the accused product, or in view of the inventor's testimony at trial.

*(b) Oxidation Product*

Kodak first says Claim 5 requires that the "oxidation product" of the silver halide developing agent be: (1) more mobile and diffusible in the processing liquid than the unoxidized developing agent, (2) colored, (3) of lower molecular weight than the unoxidized developer, and (4) preferentially transfered to the image receiver. That much is undisputed.

Urging reversal, however, Kodak says its *developing agent* (which it says is the colorless B & W developer) meets none of those criteria. Kodak here plays mere word games. As above indicated, the district court found (1) that Kodak's B & W developer corresponded to Polaroid's auxiliary dye developer, and (2) that what Kodak called its "dye releaser" was in fact a "developing agent" as that term is used in the '789 patent. 228 USPQ at 317. The auxiliary dye developer/B & W developer is not the oxidation product. As the district court noted, Kodak's argument falls when accurate terminology is used.

Alternatively, accepting the district court's finding that its "dye releaser" was a "dye developer" as claimed, Kodak asserts that a finding of non-infringement was nonetheless required because, while the process of the '789 patent uses an oxidation reaction to release the dye, the process of its PR-10 film unit uses "the subsequent hydrolysis." That assumes, for infringement purposes, that "oxidation" and "hydrolysis" constitute two distinct steps in the negative dye transfer process. We cannot credit Kodak's argument. First, it is undercut by Kodak's validity argument (made

with respect to the Whitmore-Mader references) that "oxidation" and "hydrolysis" constitute two reactions in a one-step process. Second, it does not establish that the district court's contrary finding (that "the reaction mechanisms [of] '789 and PR-10 are the same", 228 USPQ at 317) was clearly erroneous.

*(c) Miscellaneous*

Kodak argues that: "the '789 patent hardly deserves the generous interpretation the district court gave it," saying its PR-10 process was "independently discovered and developed," and its accused product enjoys "widespread commercial acceptance." Kodak points to nothing that would establish a nexus of those allegations to the issue of infringement. Mere arguments of counsel on appeal do not constitute the showing needed to undermine a district court's factual findings. Similarly, Kodak's mere assertion that "the processes differ in kind" is insufficient to show clear error in the district court's finding, 228 USPQ at 317, that they are the same.

*(5) U.S. Patent Nos. 3,594,165 and 3,689,262*

The '262 patent issued as a continuation-in-part of the '165 patent. Because of their similarity, the district court and the parties have treated them together, as will we. Polaroid asserted infringement of claims 3, 5, and 6 of each patent. Representative claim 3 of the '165 patent reads:

> 3. A photographic film unit as defined in claim 1 wherein said opacifying agent is present in said processing composition in a quantity effective, upon distribution on the surface of said photosensitive laminate,

> to prevent exposure of said photosensitive silver halide layer during processing in the presence of radiation actinic thereto and incident on distributed processing composition and said opaque layer is effective to prevent exposure of said photosensitive silver halide layer during processing in the presence of radiation actinic thereto and incident on said opaque layer.

The district court held that Kodak had failed to carry its burden of proving facts requiring a holding that claims 3, 5, and 6 of the '165/'262 patents are invalid, and found that Kodak had infringed those claims by making, using and selling its PR-10 film. 228 USPQ at 321. Kodak appeals from only the validity portion of the judgment.

*Validity*

Kodak says a person of ordinary skill in the art, viewing U.S. Patents Nos. 3,415,645 ('645 patent) and 3,053,659 ('659 patent) or 3,309,201 ('201 patent), would have found it to have been obvious to replace the opaque cover sheet disclosed in the '645 patent with the "alternative delayed opacification means" (opaque processing liquid) taught in the '659 patent. Kodak asserts that that "obvious substitution" would have resulted in the invention of asserted claims 3, 5, and 6 of '165/'262.

The '645 patent was cited to the Examiner and thoroughly considered during prosecution of the '165/ 262 patents. 228 USPQ at 319. *See also American Hoist & Derrick Co.* v. *Sowa & Sons, Inc.*, 725 F.2d at 1359, 220 USPQ at 770. Kodak's validity challenge is virtually identical to that advanced by the Examiner in rejecting claims of Application Serial No. 815,585 (of which '165 was a continuation-in-part):

> Hence, it would not be [sic, have been] unobvious to place the opacifier-containing processing solution between the transparent impermeable layer of Land '645 and thus eliminate the opaque sheet of claim 47 of Land '645 and at the same time replacing the opacifier-containing solution of Land '646 with the alkaline processing solution-permeable opaque layer dispensed from Land '645 to obtain the element and processes of the instant claims since the changes involved are of optional routine nature in the art.

In its response to the Examiner, Polaroid remarked that, absent the specific disclosure in its application, the '644, '645, and '646 references, considered singly or as a whole, would not have suggested or taught the claimed invention. Specifically, it said:

> [T]here is absolutely no suggestion in the cited references of distributing a processing composition on the exposure surface of a photosensitive laminate of the claimed structure, intermediate such exposure surface structure and a separate transparent sheet element, and/or the employment of a processing composition containing opacifying agent present in such composition to prevent, during processing of the film unit, photoexposure of the unit to actinic radiation incident on the exposure surface of the film unit, in combination with protection of the film unit's additional major surface from exposing actinic radiation incident on the film's viewing surface by means of a preformed opaque layer positioned intermediate the image-receiving and photosensitive silver halide components of the unit.

Following reconsideration, the Examiner issued a Notice of Allowance on July 30, 1970. On October 30, 1970

Polaroid entered a Notice of Abandonment of the application, but not the invention, in favor of its continuation-in-part Serial No. 39,646 (which issued as the '165 patent).

Kodak resurrects the Examiner's rejection, substituting '659 and '201 for '644 and '646 and saying, incredibly, that the district court "overlooked the existence of the '645 patent, which teaches every element of the '165/'262 invention except the opacification technique taught by '659 and '201." That argument is without merit.

The district court specifically discussed the '645 patent and rejected Kodak's assertion that "the only difference between" the '645 and '165/'262 patents was the manner in which the "delayed" opaque layer is constructed after exposure, finding that "the evidence does not support the premise of identity between the 645 and '165/'262 patents, even before processing." 228 USPQ at 319. It found that '645 did not disclose: the photosensitive laminate of '165/'262; the manner of adhesion of the corresponding layers; use of a single opaque layer to act as both light barrier and white background; and use of separate, preformed black and white layers. 228 USPQ at 319-20.

Kodak contends that the district court "erred fundamentally" in stating that "the specifications of '165/'262 and claims 3, 5, and 6 of those patents, read together, clearly provide for separate, preformed black and white layers." 228 USPQ at 320. Kodak correctly says none of the *claims* provides for separate black-and-white layers. Thus, reliance alone on separate black and white layers as a claim element, if that reliance occurred, would have insufficiently supported the district court's validity conclusion. The statement to which Kodak refers, however, is but one of a number of considerations set forth by the district court as forming the basis for its conclusion: other elements iden-

tified and relied on in the district court's analysis, such as "the photosensitive laminate" and "use of a single opaque layer to act as both light barrier and white background," find full support in the claims. *Id.* We are not persuaded that the district court's statement about black-and-white layers indicates that it overemphasized that element as alone sufficiently distinguishing over prior art, or that the statement otherwise compels reversal.

The '659 and '201 patents were thoroughly considered by the district court. 228 USPQ at 320. Both relate to "peel apart" film units. The '659 patent is directed to film units used primarily for x-ray images. The district court found that: (1) the '659 film units "are not arranged and do not function in the manner of the 165/262 film units," and do not permit the forming of the image to be viewed; (2) '659 does not disclose the photosensitive laminate of '165/'262 or the opaque layers permeable to the processing composition; (3) Figure 10 of the '659 patent does not teach the functional equivalent of an opaque flap and opaque goo, but uses an opaque envelope for processing the transparencies; and (4) if opaque goo were substituted for the envelope, the resulting unit would be nonfunctional. 228 USPQ at 320. Kodak has shown none of those findings to have been clearly erroneous.

The '201 patent is directed to film units for making 35mm film transparencies. The district court held that the disclosure in that reference of an opaque processing composition between the positive and negative layers would not have suggested the structure of the '165/'262 film unit. 228 USPQ at 320. Kodak has shown no error in that holding. Recognizing the non-controlling nature of the fact, the district court noted that Kodak, in seeking its own patent on the invention disclosed in the '165/'262 patents,

had vigorously argued the non-applicability of the very prior art it was extolling at trial. 228 USPQ at 320-21. Kodak argues here that the invention was conceived by its "young and inexperienced" attorney Cole, and was therefore obvious. Beyond the distinction between conception and invention, the argument does not reflect error in the district court's analysis, as above described, of the prior art and the invention.

Lastly in respect of the '165/'262 patents, Kodak says the district court failed to consider the prior art as a whole, but cites no support for that assertion. In framing the validity issue under § 103, 228 USPQ at 320, the district court correctly said: "the issue is whether in view of the cited prior art, the similarities between the subject matter of '165/'262 and the prior art are such that the subject matter as a whole would have been obvious," citing this court's decisions in *Thomas & Betts Corp.* v. *Litton Systems, Inc.*, 720 F.2d 1572, 1579, 220 USPQ 1, 6 (Fed. Cir. 1983), and *Kimberly-Clark Corp.* v. *Johnson & Johnson*, 745 F.2d 1437, 223 USPQ 603 (Fed. Cir. 1984). Kodak points to nothing in the district court's Memorandum Decision or in the record to persuade us that the district court departed from the requirement for consideration of the prior art and the claimed invention as wholes when applying § 103.

*(6) U.S. Patent No. 3,578,540*

Polaroid alleged infringement of claims 5 and 6 (which depend from claims 1 and 4) and 8 (which depends from claim 7) of the '540 patent. The subject matter of claims 1 and 4 (drawn to "a laminated photographic product including a transfer image") is described in the district court's opinion. 228 USPQ at 327. Claims 5 and 6 read:

5. A photographic product as defined in claim 4 wherein said support layers are relatively impermeable to water vapor.

6. A photographic product as defined in claim 4 wherein said support layers are formed of polyesters derived from ethylene glycol terephthalic acid.

The subject matter of claim Claim 7 is also drawn to "a laminated photographic product". Claim 8 reads:

8. A photographic product as defined in claim 7 wherein said laminate comprising said image-containing layer are hydrophilic and contain water and said support layers are relatively impermeable to water vapor.

The district court held that Kodak failed to carry its burden of proving facts requiring a holding that claims 5, 6 and 8 are invalid, and found that Kodak infringed those claims by making, using and selling its PR-10 film. Kodak appeals from only the validity portion of the judgment.

*Validity*

Asserting that the district court erroneously defined the invention of the '540 patent as drawn to the "concept of symmetry", Kodak says the district court failed to view the claimed structure in view of the prior art as a whole. Kodak urged invalidity in view of three prior art references: U.S. Patent No. 2,563,342 ('342 patent), U.S. Patent No. 2,983,606 ('606 patent), and its own BIMAT process.

*(a) '342 Patent*

The district court, says Kodak, ignored its own findings that "one of the objects of the ['342] patent is to obtain

greater resistance to curling," and that "it attempts to do so by the use of two support layers made of the same material, cellulose acetate." 228 USPQ at 328. It is Kodak, however, which ignores the district court's finding (which immediately followed the quoted material) that the '342 patent "does not teach the feasibility of using symmetrical water-impermeable supports which by definition will maintain a wet environment for a period of time." *Id.* That finding with respect to the scope and content of the prior art has not been shown to have been clearly erroneous.

As the district found, *supra,* the '342 patent claims a photographic film unit, i.e. a structure, having "greater resistance to curling". The specification discloses, at Col. 2, lines 39-53, a preferred embodiment comprising: a transparent "base layer" (preferably formed from a cellulosic film base such as cellulose acetate); a layer of photosensitive material on the inner surface of the base layer; an opaque water permeable layer of "good protective colloid" forming a unit with the photosensitive layer; and a transparent "backing layer" (which may also be formed of cellulose acetate, Col. 3, lines 25-27). The photosensitive layer is exposed through the base layer. Col. 3, lines 66-69. Because the positive photographic image is "supported on the relatively non-curling base layer," it remains flat during and after processing. Col. 4, lines 71-73. The specification expressly teaches an "additional advantage" when the "relatively expensive" base layer is used as a support for the final positive image because it "imparts desirable physical characteristics thereto." Col. 4, lines 73-75, Col. 5, lines 1-3. Contrary to Kodak's recharacterization of the '342 patent, we have been shown nothing in the '342 specification to undermine the district court's finding that the '342 patent

did not teach the use of symmetrical, water-impermeable supports as claimed in the '540 patent.

That conclusion is further supported by disclosure in the '342 specification that, in other embodiments, the transparent backing layer may be replaced with an opaque, white image-carrying layer formed of a material such as baryta paper (which allows two positive images to be formed), Col. 5, lines 4-12, or may be eliminated altogether, Col. 6, lines 9-15. No support-related disadvantages are attributed to those embodiments.

*(b) '606 Patent*

Resurrecting a reference cited during prosecution, Kodak says the '606 patent disclosed "the structure of the claimed film unit, but does not dictate the selection of any particular material as a support." That patent was thoroughly considered by the Examiner, and was convincingly distinguished in the '540 specification, Col. 2, line 36 through Col. 4, line 9. *See American Hoist & Derrick Co.* v. *Sowa & Sons, Inc.*, 725 F.2d at 1359, 220 USPQ at 770. Having fully considered the testimony and documents before it, the district court concluded that the '606 patent "certainly does not teach the use of water-impermeable symmetrical supports." 228 USPQ at 328. Though the court also said "I do not find the concept of symmetry to have been obvious even to a person of the high skill necessary in this field," *id.* that statement can only be read as shorthand for "use of water-impermeable symmetrical supports," *supra.* Kodak's assertion that the district court somehow improperly disposed of the '606 patent by reducing the obviousness analysis to nothing more than a search for a "concept of symmetry" is utterly unsupported by the decision or the record and deserves no further discussion.

*(c) BIMAT*

Kodak points to its BIMAT process as demonstrating knowledge in the art that film units having polyester supports on both sides are flat and distortion-free. The district court described the BIMAT process in its Memorandum Decision, 228 USPQ at 328, noting that after development of the transfer image the image-layer on the polyester sheet was wet and sticky, and that that sheet would therefore often be covered with a second transparent polyester support to permit handling of the film—thus creating a transparency, not a reflection print.

With respect to the differences between the BIMAT reference and the claimed invention, the district court found: (1) Kodak never regarded BIMAT as a permanently closed system; (2) the BIMAT laminate is made of two long strips of film, not discrete film units; (3) the BIMAT "photograph" so produced will last only ten days unless the gelatin layer is washed and dried; and (4) the BIMAT sandwich is filled only with hardened gelatin, the transferred silver halide, and a residue of processing material, thus differing fundamentally from the multiplicity of layers and retained moisture in an integral film unit. *Id.* at 328. On the basis of those findings, none of which Kodak has shown to have been clearly erroneous, the district court properly rejected Kodak's allegations of anticipation, and correctly concluded that the BIMAT process would not have taught use of symmeterical water-impermeable supports in a sealed, integral film unit to prevent curling or distortion. *Id.*

*(d) Secondary Considerations*

Kodak says Polaroid merely concocted a story at trial to "explain" film unit distortion, dubbed that theory an "in-

sight", and called the "so-called solution" derived from that theory "symmetry". *See* 228 USPQ at 327-328. It dismisses Polaroid's "real world story" as meritless and irrelevant, asserting that the inventor merely applied the best material available (polyester) to an old combination, which "simple expedient" it said was taught and suggested in the prior art. Those same assertions were made and rejected at trial. Their resurrection on appeal simply disregards the district court's contrary finding that the invention of the '540 patent involves substantially more than the choice of a known material. *Id.* at 328.

Kodak's attempt to recharacterize the trial record falls far short of establishing clear error in the district court's conclusion respecting the validity issue. Similarly, Kodak's attack on Polaroid's trial theory is both unavailing and irrelevant, the burden being on Kodak to show reversible error in the district court's judgment. With respect to that burden, we have been shown no basis for questioning the district court's findings with respect to objective indicia of non-obviousness. 228 USPQ at 328-29.

*(e) The Prior Art as a Whole*

Finally, Kodak asserts that the district court failed to view the references "as a whole". We reject that contention. Though the district court never expressly said it had considered the prior art "as a whole", Kodak has shown no basis for our concluding that the district court, which, as above indicated, repeatedly articulated the correct standard under § 103, *see, e.g.*, 228 USPQ 320, veered from the proper standard.

*(7) U.S. Patent No. 3,753,392*

Claim 1 of the '392 patent reads:

1. Photographic apparatus comprising: a film assemblage including

a cassette having means defining an exit in one end of said cassette through which a film unit is adapted to be moved subsequent to exposure, an opening near an opposite end of said cassette and an exposure aperture;

a plurality of thin, flexible film units located within said cassette in stacked relation with a foremost of said film units being adapted to be urged into a position adjacent said exposure aperture with a first edge of said foremost film unit in alignment with said exit and a second edge opposite said first edge positioned adjacent said opening;

a camera including

means for receiving said cassette;

first film-advancing means adapted to extend into said opening for engaging said foremost film unit at said second edge thereof and moving said foremost film unit, subsequent to exposure, through said exit;

second film-advancing means including a pair of rollers adapted to receive said first edge of said foremost film unit as it moves through said exit;

motor means; and

means coupled to said motor means for driving said first film-advancing means to move said first edge of said foremost film unit through said exit and for driving said second film-advancing means while said foremost film unit is in engagement therewith to rupture a container of processing liquid mounted on said foremost

film unit and spread the contents thereof between elements of said foremost film unit as said foremost film unit is advanced toward the exterior of said camera.

The district court held that: (a) Kodak failed to carry its burden of proving facts requiring a holding that claims 1, 2, 3, 4 and 12 are invalid, (b) Kodak infringed all but claim 12, by making, using and selling EK-6 cameras and PR-10 film, (c) Kodak failed to carry its burden of establishing unenforceability. 228 USPQ at 335-36. Kodak appeals from only the validity and enforceability portions of the judgment.

*Validity*

The district court found that the relevant art to which the '392 patent pertains is camera design. 228 USPQ at 333. It categorized the prior art as (1) patents disclosing front picking mechanisms; (2) patents disclosing rear picking mechanisms; and (3) a number of commercial cameras. *Id.* at 333-34. Kodak says, and we disagree, that the district court failed to consider the prior art as a whole.

(a) *Claim Construction*

The district court, says Kodak, improperly limited the element "first film-advancing means" in claim 1 to a preferred embodiment in the '392 specification (i.e. a "rear pick, which is shaped like a hook", 228 USPQ at 333), and permitted that "narrow" construction to dominate its analysis of the prior art. Kodak says that was contrary to § 112, which requires that means-plus-function claims be construed to encompass "equivalents", citing *D.M.I., Inc.* v. *John Deere & Co.*, 755 F.2d 1570, 1573, 225 USPQ 236, 238 (Fed. Cir. 1985). It says prior art structures that perform

the function of a "first film advancing means" render obvious the inventions set forth in the claims of the '392 patent.

Kodak's argument is without merit. First, it is based on a truncation of the claim language on which it rests. That language is limited to film advancing means "adapted to extend into said opening for engaging said foremost film unit at said second edge thereof and moving said foremost film unit, subsequent to exposure, through said exit". Read, as it must be, in the context of the entire claim, that language limits the "means" to that disclosed in the patent and equivalents which engage the "second edge", i.e. rear edge, of the film unit.

Second, as stated in *D.M.I.*, § 112 requires "that the limitation *shall* be construed to cover the structure described in the specification *and* equivalents thereof." 755 F.2d at 1574, 225 USPQ at 238 (emphasis in original). Here, as an initial matter, the district court properly construed "first film advancing means" in light of the structure described in the specification. 228 USPQ at 333. It went on to note, however, Polaroid's statement to the PTO during prosecution that the claims were limited to "a rear pick that engaged the film units . . . only at the trailing 'edge'." *Id.* at 334. Kodak has not shown error in the district court's finding that, in view of that prosecution history, it was compelled to read the claims as limited to a rear pick. *Id.* We will not "undertake the speculative inquiry" into why the limitation was entered, or whether it was directed to one purpose Kodak alleges (i.e., "avoiding deflection of the leading end of the film unit out of alignment with the cassette's exit slot"), but not to others. *Cf. Kinzenbaw* v. *John Deere & Co.*, 741 F.2d 383, 389, 222 USPQ 929, 933 (Fed. Cir. 1984), *cert. denied*, — U.S. —, 105 S. Ct. 1357,

84 L. Ed.2d 379 (1985). Thus, whether applied in determining validity or infringement, the broad scope argued in Kodak's brief would be inappropriate.

(b) *Front-Pick References*

Saying the district court erred in deeming the front-pick patents inapposite, Kodak wants us to hold otherwise. In view of its correct claim construction, however, we see no error whatever in the district court's conclusion that the front-pick patents, either singly or in combination, would neither have taught nor suggested "[t]hat a pick can push the film unit and that it can do so while fully maintaining the latter's physical integrity." 228 USPQ at 334.

*Combination of References*

Kodak cites a PTO position that two front-pick patents, No. 3,447,437 ('437 patent) and No. 3,511,152 ('152 patent) disclosed all elements of Polaroid's '392 patent except the one found lacking by the district court (i.e., a rear-pick that can push a film unit while maintaining its physical integrity). 228 USPQ at 334. That element, says Kodak, is disclosed in U.S. Patent No. 3,460,452 ('452 patent). Kodak then says the '437 and '152 patents teach "advancement of a film unit into rollers for spreading purposes", the teaching found lacking in the '452 patent by the district court. Thus, Kodak would have us pick and choose individual elements from three prior patents and thereby re-create the invention claimed in the '392 patent. Kodak does not tell us, however, what there is in the three prior patents that would have suggested such picking and choosing at the time the invention was made. *Interconnect Planning Corp.* v. *Feil*, 774 F.2d 1132, 1143, 227 USPQ 543, 551 (Fed. Cir. 1985).

The disclosures of the '452, '437, and '152 patents were either considered, *American Hoist & Derrick Co.* v. *Sowa & Sons, Inc.*, 725 F.2d at 1359, 220 USPQ at 770, or were deemed by the district court to have been considered by the Examiner, *see E.I. Du Pont de Nemours* v. *Berkley & Co., Inc.*, 620 F.2d 1247, 1267, 205 USPQ 1, 16 (8th Cir. 1980). Moreover, there is much in those three prior art patents, from the front and rear of which Kodak has picked, that counters the notion that they would together have rendered obvious the claimed inventions of the '392 patent.

The district court found that the '452 patent discloses a "scanning camera" that never was built because the structure proved too complex to be practical; that employed a film transport totally different from that of the '392 patent, moving film out of the pack with a manually-operated lever mounted in the pack and not part of the camera; that reversed the roller direction following exposure of the film, then broke the pod and spread the processing composition on the return trip; and that did not push the film into the rollers for spreading purposes. 228 USPQ at 334. Kodak has not shown the district court's findings on those differences to have been clearly erroneous.

The district court found that the '437 and '152 patents, both "front pick" patents, were "inapposite" because they operated "either on the surface of the film unit or by entering holes in the film unit," i.e., on the principle that the film unit has to be pulled out of the film unit. 228 USPQ at 334. The court also found that U.S. Patents Nos. 1,070,400 to Brieloff and 1,626,600 to Fish would neither have worked with an instant film unit nor have suggested the invention of the '392 patent. *Id.* It concluded that "none of the prior art patents or cameras had to solve the practical problems" solved in the '392 patent, and that the invention claimed

in that patent would not have been obvious. *Id.* at 335. Kodak has shown no error in the findings underlying that conclusion.

In sum, we have been shown nothing that might remotely indicate that Kodak has carried its appellant's burden of establishing error in the district court's conclusion that nothing in the prior art, taken singly or in "combination", rendered obvious the inventions claimed in the '392 patent.

*Unenforceability*

Noting that Polaroid had not disclosed the '452 patent to the PTO, Kodak asserts that the district court erred in weighing the materiality of that patent. The district court, having explicated the differences listed above, rejected Kodak's assertion of materiality, finding that the '452 patent was not more pertinent than the prior art cited to and considered by the Examiner. 228 USPQ at 335. We have been shown no basis on which that finding, and thus the district court's determination on unenforceability, could be reversed.

*(8) U.S. Patent No. 3,753,211*

At trial, Polaroid alleged infringement of claims 8, 9, and 10 of the '211 patent.

Claim 8 reads:

8. A self-developing camera comprising:

means for receiving a film unit;

a housing member having film unit exit means;

means for exposing said film unit;

means for distributing a processing fluid across the exposed portion of said film unit responsive to said film unit's being progressively advanced therepast, said exit means being positioned with respect to said fluid dis-

tributing means so that, in the course of advancing said film unit after exposure thereof past said fluid distributing means and thence through said exit means, a first fluid treated section of said exposed film unit is accessible exteriorly of said camera and thus exposed to ambient light while a second section of said exposed film unit extends on the opposite side of said fluid distributing means from said exit means being yet untreated with said fluid, with another section of said exposed film unit being disposed intermediate said fluid distributing means and said exit means, said exit means being disposed out of the path said exposed film unit would normally follow as it emerged from said fluid distributing means; and

means for deflecting said exposed film unit from the path it would normally follow as it initially emerged from said fluid distributing means and guiding it towards said exit means.

The district court determined that: (a) Kodak failed to carry its burden of proving facts requiring a holding that claims 8 and 9 are invalid; (b) Claim 10 is invalid; (c) Kodak infringed claim 8 by making, using and selling its EK-4 and EK-6 cameras; (d) Kodak did not infringe claim 9; (e) if claim 10 were valid, it was infringed; and (f) Kodak failed to carry its burden of establishing unenforceability. 228 USPQ at 340. Polaroid does not appeal from the judgment that claim 10 is invalid or that claim 9 is not infringed. Kodak appeals from only those portions of the judgment dealing with claim 8.

*Validity*

Arguing only anticipation, Kodak says claim 8 of the '211 patent is anticipated by Patent No. 3,405,619 ('619

patent), and that the district court erred in distinguishing the '619 patent because it did not disclose "spreading" effects not claimed in the '211 patent. The district court, says Kodak, required the prior art to "teach" functions and alleged benefits of the claimed invention not set forth in the claims. Kodak then says Polaroid cancelled all claims to spreading effects during prosecution, and that claim 8 must be seen as drawn only to structure.

The district court rejected Kodak's anticipation argument "based on a reading of the claims of '211 without any reference whatever to the specifications." 228 USPQ at 337. Agreeing that the specification cannot be used to expand the patent grant, citing *United States* v. *Adams*, 383 U.S. 39, 49, 86 S. Ct. 708, 713, 15 L. Ed.2d 572, 148 USPQ 479 (1966), the district court stated:

> The claims asserted here describe a structure of defined dimensions and characteristics, as well as the change worked by that structure on the normal path traveled by the film unit out of the rollers and camera. The specifications explain the effect of the changed path of travel. Without consideration of an invention's object and beneficial results, the novelty of most inventions would often be elusive. Accordingly, I consider the prior art not simply as it describes particular camera structures but also as those structures affect the film unit.

228 USPQ at 337.

That approach of the district court in this case was eminently proper. Claim 8 includes a limitation to "means for distributing a processing fluid", in which "means for deflecting [the] exposed film unit" play an important ancillary role in achieving a superior development of the

photograph. Understanding what is claimed by those structural "means" is possible only with reference to the specification, which teaches that means which deflect the film unit: (1) increase its path within the light-protected structure, thereby alleviating the problem of light-piping; and (2) cause the thinning of the layer of developer fluid and improvement in the fluid meniscus (i.e., "spreading"). *See* 228 USPQ at 337.

The district court, noting that the '619 patent disclosed a self-developing scanning camera and was in the class of art searched by the Examiner, *E.I. Du Pont de Nemours* v. *Berkley & Co., Inc.*, 620 F.2d at 1267, 205 USPQ at 16, found no anticipation because: the "curved passage" of the '619 camera was not intended to be a light-shielding mechanism, and was not disclosed as so functioning; the '619 patent did not teach bending the film unit to improve spreading of the processing composition; and the '619 patent discloses a design for use with peel-apart film, which does not present the same light-piping problems as does integral film. 228 USPQ at 228. Those findings not having been shown to have been clearly erroneous, Kodak's argument that claim 8 is anticipated by the disclosure in the '619 patent must fall.

Kodak further asserts that its accused cameras are identical to the structure disclosed in U.S. Patent No. 3,350,991 to Murphy. If that were true, there would be error, for "that which infringes if later anticipates if earlier." *Peters* v. *Active Manufacturing Co.*, 129 U.S. 530, 537, 9 S. Ct. 389, 392, 32 L. Ed. 738 (1889). Kodak's assertion, however, is based on the testimony of its expert witness Kaprelian, who said the film exit of Kodak's cameras was in line with the film's normal path. Polaroid's expert testified in direct opposition to that statement of Kaprelian. Kaprelian

was cross-examined on the point. The district court heard and evaluated Kaprelian's testimony, along with other testimony and the evidence, and entered its findings contrary to Kaprelian's statement. 228 USPQ at 338. Kodak has cited no authority, and there can be none, to support its suggestion that we substitute an independent, de novo evaluation of Kaprelian's testimony for that made by the district court. Trial courts have and must continue to have the right to reject the testimony of a witness, a right that can be defeated only when clear error is shown. *Anderson* v. *City of Bessemer City*, — U.S. —, 105 S. Ct. 1504, 1511, 84 L. Ed.2d 518 (1985); *The American Original Corp.* v. *Jenkins Food Corp.*, 774 F.2d at 462, 227 USPQ at 300 (Fed. Cir. 1985). That a trial court's opinion does not contain language expressly discrediting a witness' testimony does not license an appellate court to reweigh that witnesses' [sic] testimony and to make its own credibility determinations. Kodak's reassertion of Kaprelian's statement in a vacuum is insufficient to show clear error in the district court's findings and does not, therefore, sustain its burden on appeal.

*Infringement*

Citing *SRI International* v. *Matsushita Electric Corp.*, 775 F.2d 1107, 227 USPQ 577 (Fed. Cir. 1985) (in banc), Kodak says its accused cameras escape infringement under the reverse doctrine of equivalents. It argues that: the '211 patent discloses achievement of a "squared fluid mass" through the use of cartridge projections not used in the accused cameras; Kodak found thinning of processing fluid by bending the film undesirable, and overcame the problem by increasing in the accused cameras the space between the layers in the film unit. Thus, Kodak says it

achieves its squared fluid mass in a different manner—through use of a special TOPAR pod and supports of unequal thickness.

Those assertions were made to the district court, which rejected them. 228 USPQ at 340. Kodak's argument simply ignores the district court's findings that Kodak's "exit spring" is an integral part of the accused cameras, and that it acted as a means of deflecting the film, narrowing the exit means and taking it out of the normal path of the film. *Id.*

The district court heard Kodak's assertions that it knew from experiments conducted in 1970-71 of the relationship between deflection and developer layer thickness and that it had pursued its own development program. Nonetheless, the district court determined on all the evidence that the accused cameras did not escape infringement. That is a finding of fact. *See SRI International, supra,* 775 F.2d at 1122-24, 227 USPQ at 587-88. It has not on this record been shown to have been clearly erroneous.

## CONCLUSION

Kodak having failed to show that the judgment portions appealed from were based on clearly erroneous findings or errors in law, the appealed portions of the judgment are in all respects affirmed.

AFFIRMED.

## Opinion of the District Court After Trial, September 13, 1985

UNITED STATES DISTRICT COURT
DISTRICT OF MASSACHUSETTS

CIVIL ACTION NO. 76-1634-Z

POLAROID CORPORATION

vs.

EASTMAN KODAK COMPANY

MEMORANDUM OF DECISION

ZOBEL, D.J.

Polaroid Corporation, the assignee of numerous patents in the field of instant photography, brought this action against Eastman Kodak Company for infringement of twelve of its patents relating to the art/technology of both film and camera. Kodak denied infringement and alleged that all of the patents are invalid or unenforceable or both.

One of the film patents, U.S. Patent No. 3,761,269, this Court, on Kodak's motion for summary judgment, held invalid as obvious within the meaning of 35 U.S.C. § 103. The parties waived their claims of infringement and invalidity with respect to a second patent, U.S. Patent No. 3,757,657, alleged to have been infringed by certain features of Kodak's EK-4 camera. Trial proceeded with respect to the remaining ten patents [1] on the issues of liability

[1] U.S. Patent Nos. 3,362,821; 2,245,789; 3,594,165; 3,689,262; 3,578,540; 3,709,122; 3,753,392; 3,810,211; 3,810,220; and 3,770,-439.

and infringement, on one hand, and invalidity and/or unenforceability on the other. This memorandum shall constitute my findings of fact and conclusions of law as to those issues.[2]

## I. *Background*

In conventional photography, as opposed to instant photography, a picture begins as a sheet of plastic or paper coated with a thin layer of gel which has in it a suspension of microscopic crystals of silver halide. When that coating is exposed through the lens of the camera, the silver halide grains are modified to form an invisible image—the latent image. Exactly how the latent image is formed is apparently still subject to debate, but it involves the transformation of the silver halide into concentrations of minute, reduced silver particles depending upon the intensity of light on various portions of the film.

To make the latent image visible, the film is placed into a developer—a reducing agent. The developer delivers electrons to the concentration of silver halide grains that form the latent image and further transforms them into metallic silver. Because the developer will continue to deliver electrons to the silver halide, ultimately reducing all to silver, the process must be stopped after a period of time when the latent image has become optimally visible. This is accomplished by briefly immersing the film in a dilutable acid bath. Because exposure of the film to light would wipe out the latent image, developing must be accomplished in a dark room.

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[2] Both parties have claimed attorneys' fees pursuant to 35 U.S.C. § 285; Polaroid, charging willful and deliberate infringement, also seeks increased damages under § 284. These issues were reserved to a post-liability phase of the trial and I accordingly do not address them in this memorandum.

Following development, the film is put into a solvent for silver halide—hypo—which converts the remaining silver halide crystals into soluble silver salts and removes them by dissolving them. Since all of these chemicals would in time adversely affect the quality of the image, the film finally is thoroughly washed in water and dried, leaving a permanent negative image.

The negative image is formed where light converted the silver halide into metallic silver, which is seen as black. The more light reaches a particular area, the denser the concentration of silver and the darker the image in that area. The brightnesses on the negative are thus tonally repeated. To produce a positive, the process just described is reversed. The negative is projected onto sensitive paper carrying a silver halide emulsion either through an enlarger or by pressing the negative directly against the positive. The positive is then processed in essentially the same manner as was the original film.

Edwin H. Land, the founder of Polaroid and the inventor of numerous patents, including several of those in suit, began work on what he came to call "one-step photography" in 1944. In 1947, he first introduced his version of the diffusion-transfer process by which the negative and positive were produced simultaneously. The film which will become the negative was exposed in the same manner as in conventional photography. The steps thereafter differed radically from those described above. The negative is brought into juxtaposition with a positive sheet within the camera and a viscous reagent contained in a sealed pod on one of the sheets is spread between them by means of two rollers. The positive and negative, which are symmetrical, are developed at the same time. After a defined period of time, the sandwich, positive and negative with

reagent in-between, is pulled out of the camera and peeled apart. The camera also serves as the darkroom. Later, in the SX-70 system, the sandwich itself becomes the dark room.

One-step photography, as first marketed in December 1948, produced a sepia colored photograph. That was replaced by black and white peel-apart film in the early 1950s. At the same time that these sepia and black and white films and cameras were being developed and improved, Land and his associates addressed the problem of instant color photography.

Color photography requires three negative layers, each sensitive to a different primary color—blue, green or red. Complimentary dye layers—yellow, magenta and cyan, the subtractive colors positioned between the sensitive layers—absorb the primary color to be recorded on each sensitive layer. Thus, the blue sensitive layer controls the yellow dye layer next to it, which absorbs blue light; magenta absorbs green; and cyan, red. The dye layers are therefore sometimes called minus blue, minus green, and minus red. In conventional color photography, each sensitive layer contains a "coupler" and the dye layer a "color developer" which, by a reduction-oxidation process, will join together and form a dye. After exposure, the color developer is oxidized—it gives up electrons to the sensitive layer where the latter has been catalyzed by light. The silver halide layer is reduced—it gains electrons, enabling the color developer and silver halide to join. Each color uses a different coupler and the coupling process takes place within each layer. There is no transfer to different layers. Moreover, the reaction time of each coupler is different. Instant photography relies on a diffusion transfer process in which the reagents that form the negative image at the same

time operate to form the positive. Coupler chemistry did not easily adapt to diffusion transfer.

At Dr. Land's direction, Howard G. Rogers, starting in 1947, began work on the problem of instant color film. The solution he evolved discarded couplers and relied instead on dye developers, a combination of preformed dye and developer, and led eventually to one of the patents in suit, U.S. Patent No. 3,245,789. By 1957, Polaroid had made a prototype of the first one-step color photograph, and in 1963 it introduced instant color to the market under the name Polacolor, a peel-apart product.

Further work on both film and camera led to the introduction of the SX-70 system in 1972, described by Dr. Land as "absolute one-step photography." It is an elegant, highly sophisticated camera and film system. The photographic unit, which is ejected from the camera immediately after exposure, develops into a visible image in daylight and requires no peeling. The camera designed for the particular needs of this film unit contains a motor, gear train, and pick which, working together, operate to eject the film unit. The photographer needs to do nothing but focus the camera and expose the film to obtain a finished print.

Except for the '789 dye developer patent mentioned above and the 165/262 opacifying layer patents to Rogers, all of the patents in suit pertain to innovations incorporated into the SX-70 system.

From the early 1950s, Kodak had supplied Polaroid's needs for negative material. After Polaroid's development of the one-step color photograph, the parties, in December 1957, entered into an agreement pursuant to which Polaroid disclosed to Kodak certain of its color technology, including Rogers' concept of dye developers, and Kodak cooperated with Polaroid to develop and produce negative material

adapted to this technology. Kodak then continued to supply Polaroid's requirements for negative material and the parties periodically met to discuss their research activities. About 1963, the research meetings terminated, although Polaroid continued to work on refinements and improvements in color and continued to inform Kodak of its progress from time to time. In April 1968, Polaroid advised Kodak of a radically new film, which would ultimately become the SX-70, and in October of that year, Dr. Land showed Henry C. Yutzy, Kodak's vice president of research, photographs made with the new method. The parties discussed a licensing and continuing supply arrangement, without coming to any resolution. In April 1969, Kodak notified Polaroid of its intention to terminate the 1957 agreement.

In early 1969, Kodak also launched its project PL-976—an effort to put an instant product on the market by 1976. The object was to produce a high quality color print in the camera which preferably would not require peeling and to do so without the assistance of existing patents. PL-976, then optimistically redesignated PL-974 (moving back to 1974 the projected market date) investigated a variety of photographic chemistries. During 1970, groups at Kodak outside the research laboratory became more interested and the project was once again renamed and restructured. Project P-129 was begun to develop an instant color film similar to Polacolor and compatible with Polaroid cameras. P-130 was to produce an integrated system—Kodak film for a Kodak camera. The former, P-129, was abandoned toward the end of 1972 after an expenditure of 94 million dollars. Although the stated reason was that Kodak had been unable to solve certain problems caused by the particular chemistry used, the cessation of work on P-129 fol-

lowed shortly upon the introduction by Polaroid of its SX-70. Contemporaneous Kodak memoranda recognized that any product created by P-129 would be obsolete even if it appeared on schedule.

The P-130 effort continued with increasing intensity. Because Kodak sought to attain its objectives—camera and film—simultaneously, not sequentially, the expenditures of manpower and money were enormous. Between 1,300 and 1,400 people were assigned to P-130 at the peak period—late 1973 to mid-1975. Dr. Albert Sieg, Director of Photographic Strategic Planning, described the approach taken by Kodak. The different groups assigned to solve various discrete problems were to explore the existing technology and pursue parallel work on different applicable technologies. When no technology existed to solve a particular problem, invention was called for. That, in turn, required increased funding and increased resources. Despite these efforts, numerous problems defied solution.

By the early part of 1972, Kodak had developed the "Lanyard" camera model, so called because the picture was to be ejected by use of a lanyard. It advanced the film by means of front picks. It did not contain a motor nor a gear train but did include devices to strip the pod from the photograph and to trim its edges. Although, as a consequence, the camera was relatively large, Kodak's marketing people were content with its size. Following Polaroid's SX-70 announcement in April 1972, and review by the P-130 committee of its implications, the committee found that the "P-130 program as earlier defined, was no longer desirable." The Lanyard camera was too large by comparison to that marketed by Polaroid.

Kodak also encountered numerous difficulties in its attempt to develop the film. Like Polaroid, it had to work out

the imaging chemistry of integral film. By the fall of 1971 Kodak researchers had focussed on two dye release chemistries but did not achieve sufficient speed with either one of them until late 1972. By mid-April 1972, Kodak researchers had still not worked out a solution to the problem of dye stability and they had yet to solve problems associated with the mordant and the opacification layers. Although they hoped to achieve a "no-inventions" prototype by January 1973, a host of difficulties remained as late as mid-December 1972.

It is undisputed that Kodak purchased large quantities of SX-70 cameras and film in October 1972, after they became commercially available. It is also undisputed that the several groups and departments involved in P-130 were ordered to familiarize themselves with the Polaroid product and to test it. As a result, Kodak's marketing coordinators and managers commented in January 1973 that the P-130 program, as it then existed, was only "marginally acceptable." They recognized that Polaroid had set the standard Kodak would have to meet and that even a "me-too" program would require more than two and one-half years to produce a less than equal design.

Kodak did, in fact, introduce an integral system consisting of its EK-4 and EK-6 cameras and PR-10 film in April 1976. It is those products which, in several particulars, are alleged to infringe the patents in suit. Although, as Kodak correctly points out, this case involves nine [3] different patent disputes and instant photography is not the perpetual domain of Polaroid, the response of Kodak to the SX-70 system has some bearing on the judgment concerning the

[3] Although ten patents are in issue, two, Patents No. 3,594,165 and No. 3,689,262, are substantially identical, reducing the number of disputes to nine.

underlying patents. Also while it is by no means decisive on the question of infringement of any particular patent, so does the suggestion in September 1973 of Kodak's Development Committee that "[d]evelopment should not be constrained by what an individual feels is potential patent infringement."

Kodak denies each allegation of infringement and argues the invalidity of each claim asserted against it. I will deal with the specific allegations of infringement and validity in the discussion pertaining to each patent. Certain broad contentions recur, however, and are properly addressed here.

The parties are in substantial agreement on the standards for judging anticipation and obviousness under 35 U.S.C. §§ 102 and 103. They disagree in one area that bears on several of the patents in suit—the effect of Polaroid's internal work and whether it constitutes part of the prior art against which the validity of a particular patent is to be judged. Work done within Polaroid which was not published is not prior art and I have not considered it in judging the validity of any patent. *Del Mar Engineering Laboratories* v. *United States,* 524 F.2d 1178, 1182 (Ct. Cl. 1975).

As to each patent, Polaroid relies on the presumption of validity. Kodak claims that this presumption is in nearly every instance undercut by Polaroid's failure to disclose pertinent prior art to the Examiner. The parties have genuine disagreements as to what constitutes prior art, but I rule that Polaroid has fulfilled its obligation to the Patent Office where the patent in suit is in the class of patents that was cited. *See, e.g., E.I. Du Pont de Nemours* v. *Berkley & Co., Inc.,* 620 F.2d 1247, 1267 (8th Cir. 1980); *International Telephone & Telegraph* v. *Raychem Corp.,* 188

U.S.P.Q. 214, 219 (D. Mass. 1975), *aff'd*, 538 F.2d 453 (1st Cir.), *cert. denied*, 429 U.S. 886 (1976). In addition, prior art described in the specifications is expected to be considered by the Examiner. *Gould* v. *General Photomics Corp.*, 534 F. Supp. 399, 403 (N.D. Cal. 1982). Patent Examiners are also presumed to be aware of patents which issued from applications they had earlier examined. *Hahn & Clay* v. *A.O. Smith Corp.*, 320 F.2d 166, 172 n.15 (5th Cir.), *cert. denied*, 375 U.S. 944 (1963).

In support of its argument that the patents are valid, Polaroid points to the commercial success of the processor product disclosed. The SX-70 camera and film system has unquestionably been immensely successful, as has been Kodak's product. The evidence presented is, however, inadequate to permit me to assign to any one patent credit for the commercial success of the whole. Accordingly, this factor has played no part in the decision.

Finally, I have for the sake of completeness proceeded to consider the issue of infringement even as to those claims found to be invalid.

II. *U.S. Patent No. 3,362,821*

Land U.S. Patent No. 3,362,821 concerns stabilization in one-step color photography. All photographic processes, as described earlier, implicate three steps—exposure (formation of the latent image), development (formation of a visible image), and stabilization (cessation of chemical reactions and preservation of the visible image). In conventional photography stabilization is accomplished by subjecting the film to different chemical solutions seriatim. One-step photography, by definition, required telescoping all of the steps, which is not to say that numerous steps did not occur sequentially within film and camera. Thus, chemicals

were needed which would, when combined with the processing composition, permit development, then stop it at the optimal point and thereafter remain neutral. Solution of this problem was complicated by the fact that each type of film, sepia, black and white, and color, unexpectedly called for markedly different stabilization techniques.

Polaroid's first one-step film, introduced in 1948, produced sepia prints in a peel-apart format. For stabilization, Dr. Land used metal salts and water soluble esters. In the presence of the processing composition, the metal salts reacted with the esters to reduce the pH. Because their reaction rate with the alkali of the processing composition was relatively slow, they permitted formation of the image before they broke up to produce alcohol and neutralizing acid. Finally, the reaction of the several components of this system reduced the pH to an ideal level, just above neutral. Too much acidity would cause production of sulfur which, in turn, would attack silver and ultimately destroy the photograph.

This stabilization mechanism was highly successful also because the photographer needed to do nothing but take the picture. Brown pictures were not ideal, however, and there was great pressure to produce black and white film.

Because both sepia and black and white film involved silver transfer, Dr. Land and his associates had thought that the same stabilization process would work with black and white film. They found that it did not. To obtain a black and white print, the aggregation of silver ions was changed. That produced a shield. As a consequence, the metal salt, lead acetate, could not uniformly penetrate the black and white surface and the migration of the esters was also retarded. The ultimate solution was the print coater. The photographer had to swab each positive with a solution of

a polymer and acetic acid that both washed the film and gave it a protective coating. This stabilizing system also required redesign of the black and white image and the support.

Color film called for still different techniques. The timing needs of color were different from those of both sepia and black and white. During the 1950s and into the early 1960s, when Polaroid and Kodak still cooperated, scientists from both camps discussed a number of proposals, including a suggestion of Kodak's Dr. Vittum to use an acid layer of commercially available sulfostearic acid.[4] None worked successfully and as the scheduled date for marketing the new color film, Polacolor, approached, Polaroid expected to offer the film with a print coater. Even that, however, presented difficulties. Because the problems inherent in stabilizing color film differ radically from those pertaining to black and white, the coaters used different materials and required different "skills" from the user. The color print had to be coated within five seconds after removal from the camera. It had to be swabbed 16-18 times and the coating was slow to dry.

The print coater was not only cumbersome and difficult to use, it also lacked elegance. During the summer of 1962, Dr. Land and his associates engaged in intensive investigation of alternative stabilizing techniques. To succeed, the stabilizing system had to meet three requirements. It had to allow the processing emulsion to retain its alkaline characteristics long enough to permit adequate image development and dye transfer. It then had to drop the pH abruptly and

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[4] The researchers at Polaroid did not pursue Dr. Vittum's suggestion because sulfostearic acid does not satisfy prerequisites for stabilization of a color diffusion transfer system. It is not a high polymer, it does not have a delay mechanism, and it is a strong acid that might affect the mordants.

permanently to prevent further development and dye transfer, and third, it had to remove from the image-receiving layer the alkali metal ions introduced by the processing emulsion. The alkali metal ions, if not removed, would precipitate as salts in the image receiving layer and in time cause the image to become dull.

In September 1962, Land conceived and indeed suggested to Messrs. Yutzy and Damschroder of Kodak, the use of a nondiffusible polymeric acid and associated timing layer. Unlike the esters which first had to decompose to provide a neutralizing acid, the acid polymer would react instantly upon contact with the alkali. The acid polymer would then abruptly drop the pH in the film structure by removing alkali metal ions from the processing solution and attaching them to itself. The layer had to be thick enough to provide adequate polymeric acid to accomplish the task, and a mechanism had to be incorporated to delay the reaction until the completion of development. The idea had two additional advantages. The polymeric acid, by removing the alkali metal ions, prevents the precipitation of metal and attendant dullness of picture. It thus produces more brilliant images. Color diffusion transfer by its very nature requires the disposition of a larger volume of alkali than does sepia or black and white film. The polymeric acid layer disposes of that alkaline environment and thus enables maintenance of a good image indefinitely.

Polaroid immediately incorporated the concept of a nondiffusible polymeric acid layer into its Polacolor film which was, with that stabilization mechanism, introduced to the market in 1963. Dr. Land considered building the polymeric acid layer described above into two possible locations of the film unit: between the support and the adjacent image-receiving layer; or beyond the far part of the negative, that

is, between the support associated with the negative and the innermost layer of dye developer. Two patents issued on this invention, one pertaining to the location of the acid layer near the positive, Land U. S. Patent No. 3,362,819; the other pertaining to an acid layer near the negative, Land U. S. Patent No. 3,362,821, the patent in suit. Polacolor employs the location described in the '819 patent. Polaroid alleges that Kodak's PR-10 film, which admittedly contains an acid layer, places the layer in the photosensitive element thereby infringing the '821 patent.

The '821 patent discloses a layer of a nondiffusible acid-reacting reagent in the photosensitive element. It describes the preferred embodiment of the invention as a layer containing an acid-reacting polymer, and particularly, a polymer-containing free carboxyl group. The patent uses the shorthand expression—a polymeric acid layer. It includes a list of specific polymeric acids suitable to the purpose. The specifications teach that the polymeric acid layer is preferably 0.5 to 1.5 mils thick; that is, relatively thick as compared, for example, with the dye layers.

The acid layer contains acid groups attached to a polymer so as to be nondiffusible. It reduces the pH in the image-receiving element by attracting alkali ions and then trapping them by precipitating them into the acid layer. The patent accordingly describes the acid layer as "a mordant for alkali." [5] It further teaches that the action of the polymeric acid must be controlled so that it will not interfere either with the development of the negative or with the image transfer of unoxidized dye developers. In other words, the reduction of pH must be properly timed. The patent suggests three timing mechanisms. A separate spacer layer of

[5] *See* part V for definitions of terms used herein.

inert polymer may be used to delay contact between the alkali ions and their trap, or an inert polymer may be mixed into the acid polymer to make the acid less accessible to the alkali ions. A third method calls for an acid layer with a relatively lower concentration of acid groups, again to prevent too rapid attraction and precipitation of alkali ions.

The patent states that the polymeric acid layer "is provided in the photosensitive element and is positioned adjacent the support, i.e., between the innermost layer of dye developer and the support." That positioning is depicted as well in Figure 1 of the patent. The specifications by reference to Figure 1 describe the photosensitive element as comprising "a support bearing, in turn, a layer containing as a nondiffusible acid-reacting reagent, a polymeric carboxylic acid . . ." and the dye developer layers. The image-receiving element comprises a "support carrying an image-receiving layer."

Claim 1 is the only claim asserted against Kodak. In the context of color diffusion transfer processes, it claims the use of a layer of a nondiffusible polymeric acid containing sufficient acid groups to effect a reduction of at least two pH units in the surface of the image-receiving layer, compared with the initial pH of the processing composition, prior to the completion of the imbibition period. The acid layer is claimed to be contained in the photosensitive element and positioned between the support and the innermost negative layer.

Kodak denies infringement and contends that the patent is, in any event, invalid under 35 U.S.C. §§ 102, 103 and 112 and that it is unenforceable. It relies in its post-trial brief on two prior art references listed in the Section 282

Notice: U. S. Patent No. 2,584,030 and Kodak French Patent No. 1,293,709.[6]

The '709 patent is said to disclose the process described in claim 1 of '821 and thus to render that claim invalid under 35 U.S.C. §§ 102(a) and 102(b). French Patent No. 1,293,709 describes color diffusion transfer processes employing coupler chemistry in which the photosensitive element is exposed, an alkaline-processing solution is applied, and a diffusible colored image is transferred to an image-receiving layer. It acknowledges that in "processes involving the transfer of dye images to mordanted reception layers, small amounts of alkali . . ." may also be transferred and may be objectionable. One proposed solution is to wash the reception layer to remove such materials, and one method offered is "to squeegee the dye images into contact with a moist sheet containing . . . an acrylic acid polymer . . . to neutralize the alkali. . . ." Alternatively, it suggests providing "a hydrophylic [sic] organic colloid layer containing the mentioned acids . . . between the mordanted support and . . ." reception layer, which layers are later stripped from the mordanted support.

I find that '709 does not anticipate claim 1 of '821. The acid layer in '709 is not located in the photosensitive element, but between the photosensitive layer and its support. Both Dr. Land and Kodak's expert, Dr. Trautweiler, agreed that the '709 layer does not reduce the pH of the surface of the mordanted support, the analog of the image-receiving

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[6] The Section 282 Notice listed a number of prior art references and Kodak offered evidence as to all. U.S. Patent No. 2,584,030; French Patent No. 1,293,709, and corresponding abandoned U.S. Application Serial No. 29,075; U.S. Patent No. 2,923,623; Australian Patent No. 231,185, and its equivalent British Patent No. 804,971.

layer of '821. More fundamentally, the acid layer of '709 is a scavenging layer designed to prevent alkali from reaching the mordanted support, not a stabilizing system designed to stop the development process and prevent subsequent chemical reactions. The experts agreed, moreover, that they knew of no commercial unit in which dyes diffuse through an acid layer, that is, one in which the acid layer is positioned as in '709. That patent does not describe the process of '821 and the process it does describe does not solve the problem addressed by '821.

Kodak asserts that '709, in any event, and U. S. Patent No. 2,584,030 disclose the technique of using an acid layer in the photosensitive element to reduce pH and that '821 therefore represents no more than the application of routine skill. Kodak's assertion is premised on a most narrow reading of the patent in suit, namely, that the purpose of the acid layer is to neutralize the processing composition and thereby to prevent stain caused by the oxidation of the developer. I do not, in view of the evidence adduced at trial, treat the invention so severely. The '821 patent describes a system of stabilization that not only lowers the pH but does so in a specified manner with a timing mechanism. Its purpose is not merely to prevent stain but also to increase the light-stability of the dyes in the image. The specifications and examples teach the use of particular acids and acid layers of particular thicknesses. They teach three different timing mechanisms, which are earlier detailed, and the means of achieving light stability through trapping positive cations in the acid layer so that they cannot go to the image layer and damage it.

For the reasons outlined earlier, I do not find in the '709 patent the teaching of the stabilization system of '821, even to one of the high level of skill characteristic of those en-

gaged in this field. The single reference on page 52 of a 53-page document [7] to a "hydrophylic [sic] organic colloid layer containing . . . acids" to remove "small amounts of alkali" from the mordanted reception layers does not teach the use of an acid layer with a timing mechanism. Nor does the peel-apart film of '709 teach the location of the acid layer "in the photosensitive element."

The second prior art reference relied on by Kodak is Land's '030 patent, issued ten years before '821. It teaches stabilization techniques useful for sepia images and describes two processes, one using heavy metal salts and the other, an acid. One of the acids specified is cellulose acetate hydrogen phthalate, which is also a preferred polymeric acid in '821. The '030 teaches the need to reduce the pH of the liquid composition to 7, 6 or lower, and while it is preferable that "the acidifying substance" be "included on or associated with the image-carrying layer . . ." such is not essential and "it might, for example, be positioned between the photosensitive layer and the base carrying this photosensitive layer. . . ." This patent, like '709, describes a peel-apart film structure. The acid layer is available to the alkaline reagent directly so that neutralization occurs immediately. The amount of acid must be small enough not to interfere with silver development. During processing, the acid is slowly dissolved by the processing composition while simultaneously the pH of the processing composition is slowly lowered.

I credit the testimony of Dr. Land that this mechanism does not teach the system embodied in '821. To say, as did Dr. Trautweiler, that if one deletes the words "color" and

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[7] The reference here is to abandoned U.S. Application Serial No. 29,075 which the parties agree corresponds to the French '709 patent.

"dye" from claim 1, one gets the process described by the '030 patent does not take sufficient account of the essential differences between the processes for sepia and color. Color diffusion transfer requires more time than the simpler silver transfer of sepia, and color requires the removal of the alkali metal ions from the environment of the image entirely. Neither these unique requirements of color, nor the mechanisms disclosed in '821 for meeting them are disclosed in '030.

The evidence is undisputed, moreover, that the art had been full of experiment for several years, but no one had perceived the particular conformation, position and qualities of the '821 polymeric acid layer for stabilizing color diffusion transfer film units until Dr. Land did in 1962. He was the first despite the fact that the parties in this case include on their staffs, without doubt, the world's preeminent experts in the field of instant photography.

Kodak further argues that the '821 patent is invalid because it does not teach how to make the claimed invention as required by 35 U.S.C. § 112. One of the requirements of claim 1 is that the polymeric acid layer contain sufficient acid groups to effect reduction in the pH of the surface of the image-receiving layer of at least 2 pH units compared with the initial pH of the processing composition. Kodak's expert, Dr. Trautweiler, calculated the drop in pH in several examples cited in '821. His computations show a substantially smaller reduction and Kodak argues therefrom that the patent does not teach how to make the claimed invention. The calculations are just that—they are not based on experimental data. Moreover, Dr. Trautweiler did not view the system as a whole. Other components effect some reduction of pH before the acid layer begins its work. But the acid layer completes the process and does thereby cause reduction of the pH on the surface of the image-

receiving layer by at least two pH units. In this fashion, the invention works precisely as claimed.

Finally, Kodak contends that the patent in suit is unenforceable because Polaroid's attorney and Dr. Land allegedly misrepresented the content of '030 to the examiner and failed to inform the Patent Office of the existence of the '709 patent. To prevail in this defense Kodak must show that Dr. Land and his attorney made misrepresentations with knowledge of their falsity or in an atmosphere of gross negligence as to their truth. It must further show that any information withheld was material. Materiality means facts known to the applicant which but for nondisclosure would have prevented the patent from issuing or would have restricted the claims. *Digital Equipment Corp.* v. *Diamond,* 653 F.2d 701, 715 (1st Cir. 1981) (citing *Union Carbide Corp.* v. *Filtrol Corp.,* 170 U.S.P.Q. 482 (C.D. Cal. 1971), *aff'd,* 179 U.S.P.Q. 209 (9th Cir. 1973)). The First Circuit does point out that the questions of culpability and materiality are interrelated such that an intentional scheme to defraud may require a lesser showing of materiality; a negligent misstatement, a greater one. *Digital Equipment Corp.* v. *Diamond,* 653 F.2d at 716.

The '030 patent was unquestionably cited to the examiner. Given my finding above on the relevance of its contents to the invention of the patent in suit, I find that Dr. Land and his attorney did not in any way misrepresent its significance. French Patent No. '709 was not cited at all, but I credit the testimony of the attorney, Mr. Mervis, that he was unaware of it until many years later. I find, therefore, that the '821 patent is valid against all of the defenses raised by Kodak.

The issue of infringement hinges on the definition of the location of the acid layer in Kodak's PR-10 film. Specifi-

cally, the question is whether the acid layer is "in the photosensitive element." The parties do not disagree that the PR-10 acid and timing layers are positioned between a support and the photosensitive silver halide and associated dye layers. But Kodak points out first that in the manufacture of PR-10 the acid layer is coated on one support, the negative layers on another support, and that they are manufactured as separate elements and then assembled into one film unit. Because the negative and acid layers are coated on different supports, it argues, the acid layer is not positioned "in the photosensitive element." The difficulty with that argument is that claim 1 is admittedly a process, not a product claim, and in defining the process it describes the position of the acid layer in the photosensitive element precisely where it is located in PR-10, "between the support and the innermost layer containing . . . dye image-forming substance." The photosensitive element is described in the specifications as including, in order, a support, a polymeric acid layer, a spacer or timing layer, and the layers containing the silver halide emulsions and dye developer. Regardless of the manner of manufacture, the sequence of layers in PR-10 is that described in the patent, and during processing, PR-10 is comprised of the same layers depicted in Figure 1 of the patent and has the same structure described in claim 1.

Conflicting definitions of "photosensitive element" in other Polaroid patents do not save PR-10 from the claim of infringement. The term clearly has various possible meanings, as is shown by Kodak's recital of other references. '821, however, provides its own clear definition.[8] A patentee

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[8] "When *I* use a word," Humpty Dumpty said, . . . "it means just what I choose it to mean—neither more nor less."

*(footnote continued on following page)*

is entitled to choose his own terms and to insist on them so long as he is consistent and does not contravene any single established or accepted meaning. *Mooney* v. *Brunswick, Corp.*, 663 F.2d 724 (7th Cir. 1981); *Harrington Manufacturing Co.* v. *White*, 475 F.2d 788, (5th Cir.), *cert. denied*, 414 U.S. 1040 (1973).

For the reasons stated, Land U.S. Patent No. 3,362,821 is valid and infringed by Kodak's PR-10 film.

III. *U. S. Patent No. 2,245,789*

As noted earlier, Howard G. Rogers began in 1947 to explore the possibility of importing color into one-step photography. Conventional color photography relied on coupler chemistry to produce color. A color developer became oxidized, and as a result combined with a coupler compound to form a dye. Different couplers were needed to produce different colors and each had a different reaction rate, making this process unsuitable for diffusion transfer which required a synchronization of reactions that coupler chemistry simply did not permit. Rogers sought to solve that problem by his coupling dye process disclosed in U. S. Patent No. 3,087,817, a patent not directly involved in this litigation. It used preformed dyes with coupling groups attached. In that process, the oxidized color developer joined with the coupler and its attached dye and thereby controlled not the formation of dye but the transfer of the

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*(footnote continued from preceding page)*

> "The question is," said Alice, "whether you *can* make words mean so many different things."
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> "The question is," said Humpty Dumpty, "which is to be master—that's all."

L. Carroll, *Alice's Adventures in Wonderland & Through the Looking-Glass* 186 (1960).

preformed dye to the positive layer. That is, when the processing composition is introduced, the color developer is oxidized where silver halide was exposed and, as described before, it then joins with the coupler. The junction of color developer and coupler forms an insoluble compound which remains in the negative layer and is ultimately discarded as the negative is peeled. Where silver halide was not exposed no oxidation-reduction and no coupling takes place; the coupler with dye attached remains soluble in the processing solution and can transfer to the positive layer. The coupling dye process eliminated the problems attendant on different reaction times as the same coupling groups could be used for all dyes. But all color developer compounds used in the coupling process, paraphenylenediamines, themselves presented other difficulties. They were unstable when stored in the negative and had a tendency to desensitize the silver halide emulsion; they sometimes stained the picture; they could cause dermatitis; and they gave relatively slow reaction time and film speed.

In the early 1950s, Mr. Rogers proposed an entirely new approach, the use of dye developers. A single molecule of such compounds contains both dye to form the image and developer to develop the latent image in exposed silver halide and to control diffusion.[9] The idea was to change the solubility and therefore mobility of the dye through oxidation by the developing silver. Mr. Rogers, in fact, hypothesized two possibilities, a "positive" dye developer which as

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[9] One of the issues concerning both validity and infringement of the patent in suit is the precise function of the developer. Mr. Rogers testified that the term refers to compounds that have the ability either to develop the silver halide directly or to act as messenger of electrons—to have the "redox potential" necessary to be a developing agent. I accept that testimony and that definition.

a consequence of oxidation would produce a less soluble product, and a "negative" dye developer which would create a more mobile dye product. These concepts were ultimately embodied in two patents, respectively, U. S. Patent No. 2,983,606 and No. 3,245,789, the patent in suit. The positive dye developer process disclosed in the '606 patent is the one which Polaroid has used commercially in all of its color films since the introduction of Polacolor. Polaroid alleges that the negative dye developer process was incorporated into Kodak's PR-10 film.

The positive dye developer process works as follows. After exposure and the introduction of the processing compound, an auxiliary developer, which may be included in the processing compound or built into the negative layer, will in the exposed portions of silver halide, give its electrons to the silver halide. It, in turn, takes electrons from the dye developer, which thereby becomes oxidized. Oxidation precipitates the dye, thereby fixing it in the negative layer. Where silver halide was not exposed, the dye developer is not oxidized; the dye is not precipitated, and the dye therefore is able to transfer to the positive layer to form the colored image. In both the developed and undeveloped portions, the silver halide stays in the negative. Where the scene is light, the dye is held back in the negative by its precipitation there, while in the darker portions of the picture where silver halide remains undeveloped, and the dye developer unoxidized, the dye is free to move to the positive, the image-receiving layer.

As described in Rogers U.S. Patent No. 3,245,789, issued to Polaroid Corporation on April 12, 1966, on Application Serial No. 107,889, filed on May 5, 1961, in the negative dye developer process the dye is transferred to the positive layer in the exposed—the developed—region of

silver halide. In general terms, the dye developer, which has relatively low mobility to begin with, is, as is true for the positive dye developer process, oxidized. In the negative dye developer process, however, the dye developer splits off a dye molecule as a result of oxidation. This molecule then has a lower molecular weight and greater solubility, so it becomes more mobile. It is then able to transfer to the positive layer. Where silver halide is not exposed, the dye developer is not oxidized and not split. Being relatively immobile, the unoxidized dye developer remains in the negative.

Specifically, the patent discloses a color diffusion transfer process for forming color photographs or transparencies using compounds referred to as "negative transferring developing agents." If colored, these compounds are described as being dye developers in the reduced state, "i.e., they are compounds which are both dye and a silver halide developing agent." They are characterized as being "relatively nontransferable to the image-receiving layer" but they form a substantially more mobile, diffusible oxidation product. That is, the colored oxidation product is more diffusible than the unoxidized negative transferring developing agent.

The patent suggests that the photosensitive element of the film unit, the negative, contains in the silver halide emulsion a layer of the dye developer.[10] When, after exposure, the liquid processing composition is introduced, it permeates the emulsion to provide a solution of dye developer. Then, as the exposed silver halide is developed,

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[10] Although I have referred to the photosensitive element and dye developer layer in the singular, a film unit used in instant photography consists of a multiplicity of very thin layers, each of which performs a separate and unique function. For color photography, a separate negative and separate dye developer layer exists for each of the three subtractive colors.

the oxidation-reduction reactions previously described and the attendant transfers of dye molecules take place.

Polaroid charges infringement of claims 5 through 9. Claims 6 through 9 are dependent on claim 5.

Claim 5 describes the process outlined above. Claim 6 adds the requirement that the mobile oxidation product be a dye that absorbs light in the same region of the spectrum in which its associated silver halide emulsion is sensitive. Claim 7 provides for positioning the dye developer layer between the silver halide emulsion and the film unit support. Claim 8 claims the addition of an auxiliary developing agent, which is colorless. Claim 9 adds the requirement that development be effected in the presence of an antifoggant.[11]

Kodak challenges the validity of the patent and denies infringement. It asserts, first, that the process taught in the patent and claimed in claim 5 does not in fact work, as required by 35 U.S.C. §§ 101 and 112. Second, it contends that the process is anticipated by the prior art and that it is, in view of the prior art, obvious. Resolution of these contentions depends on the date of invention and the scope and content of the prior art applicable in light of that invention date. Finally, Kodak argues that PR-10 practices the prior art and not the teaching of the patent in suit. Therefore, either the patent in suit is invalid in view of the prior art or, if valid, it is not infringed.

Section 101 provides that "whoever invents . . . any new and useful process . . . may obtain a patent therefor." Section 112 requires that the specification contain "a written description of the invention, and of the manner and process

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[11] Fogging is the occurrence of cloudiness or partial opacity caused by chemical action or light. Antifoggants are chemicals designed to counteract this effect.

of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art . . . to make and use the same. . . ."

Kodak asserts first that the '789 invention is uselsss because, as described, it will produce at best a poor image. This is so, it says, because the negative dye developer must be mobile even in the unoxidized state to serve as the developing agent for the silver halide. That is, unless the dye developer molecules are mobile, they cannot move into contact with the silver halide. Kodak asserts that if they are mobile, the developer molecules will transfer to the positive layer unoxidized and thus cause poor image discrimination. Second, Kodak argues that the patent, in fact, discloses only one negative dye developer compound, bis-sulfonyl hydrazide, and that this compound does not work even in a peel apart format which mechanically stops any further diffusion transfer. *A fortiori,* it does not work with integral film.

The argument does not accord with the appropriate legal standard and it misconceives the disclosure of the patent. A patent is invalid under § 101 if the "invention is 'incapable of achieving any of the aims of the patent under any conditions.'" *E.I. DuPont de Nemours & Co.* v. *Berkley & Co.,* 620 F.2d 1247, 1258 n.10 (8th Cir. 1980). The process described in this patent does occur precisely as planned. Experiments by both parties demonstrated that the negative dye developer molecule split when oxidized and thereby produced a mobile dye which transferred to form an image that corresponded to developed areas in the negative. Although the evidence showed that the images obtained were poor, because more dye developer transferred than is desirable, I credit the testimony of Mr. Rogers that the solution, to add a larger ballast, was an expedient well known in the art. Indeed, Dr. Lee J. Fleckenstein, a senior

research associate in the Color Instant Laboratory Division of Kodak, testified at length about the experiments he conducted, beginning in 1958, with various compounds and ballasting groups. I am persuaded therefore that one of ordinary skill in this field "would be able to understand the patent disclosure and, from that disclosure, using the skill of the art, could build an operative system." *Decca Ltd.* v. *United States,* 544 F.2d 1070, 1077 (Ct. Cl. 1976), *cert. denied,* 454 U.S. 819 (1981). Accordingly, the patent is not invalid under either § 101 or 112.

The remaining issues of invalidity are bound up with the issue of infringement. They all require determination of the date of the invention of '789 and the manner in which the processes described in the cited patents and patent applications and those of PR-10 and '789 work.

The background of the inventions disclosed in the '606 positive dye developer and '789 negative dye developer patent is outlined above. Mr. Rogers conceived of the idea of both positive and negative dye developers at some time during the early 1950s. He thereafter conducted experiments with positive dye developers and succeeded in obtaining image transfer by 1955. He did little, if any, work with negative dye developers because they were relatively slow and required the use of reversal emulsions. Mr. Rogers had, however, observed the effects of negative dye developers and he recalled that the images were poor and transient.

In 1955, Polaroid very broadly disclosed both positive and negative dye developers in the form of an amendment, claim 28, to a pending patent application, Serial No. 415,073. The claim was rejected by the Examiner and Polaroid eventually cancelled it without prejudice. Polaroid did not by this action concede invalidity of that claim.

In 1957 Polaroid disclosed both positive and negative dye developer processes to Kodak pursuant to the mutual disclosure agreement made in December, 1957. That document states that "Polaroid has examined a large number of processes for obtaining transfer images in color," and that except for a few described in the literature, these processes are described in patents and patent applications appended to the document. The descriptions refer to particular chemicals and the manner in which they react; the use of reversal emulsions, antifoggants and auxiliary developers; and a variety of arrangements of the several layers of a film unit. The document also asserts that "[N]egative transfer images may be obtained by forming a mobile dye as a result of development of the latent image. . . ." It specifically discloses the use of "a sulfonyl hydrazide of one or two molecules of a dye," the class of compounds used in Example 1 of the patent.

The application for the '789 patent was filed on May 5, 1961.

Polaroid claims an invention date at least as early as 1953, but, in any event, no later than December 1957. To sustain either date, it must prove both that by that date Mr. Rogers had conceived of the negative dye developer and that he had reduced it to practice. That is, Polaroid must show not only that Mr. Rogers formulated the process in his mind, but also that the process had been successfully performed. To show reduction to practice it must show that "the series of steps constituting the process . . . [have been] carried out in such a manner as to demonstrate the practicability of the process." *Bell Telephone Laboratories* v. *Hughes Aircraft Co.*, 422 F. Supp. 372, 380 (D.C. Del. 1976) (quoting 1 Rivise and Caesar, *Interference Law and Practice* § 131 (1980)), *aff'd*, 564 F.2d 654 (3d Cir. 1977), *cert. denied*, 435 U.S. 924 (1978).

Despite the disclosures in the 1955 patent application and the 1957 document to Kodak and despite the fact that the latter refers to the compounds ultimately specified in the patent, Polaroid adduced no evidence of any documented experiments that demonstrated the efficacy of negative dye developers until the experiments conducted in November 1960. Mr. Rogers' testimony concerning his observations during the 1950s was tentative and constitutes tenuous evidence of reduction to practice at best. Accordingly, I find that '789 is entitled to an invention date of November 1960.

To show both invalidity and noninfringement, Kodak relies on the splittable coupler process represented by its British Patent No. 840,731 granted on July 6, 1960 and three references based on inventions of K.E. Whitmore and P.M. Mader of Kodak.[12] The last three are also directed to the splittable coupler process; but they disclose in addition a "deamidation" process.

In the splittable coupler process of the British patent a mobile color developing agent develops the exposed silver halide and becomes oxidized. It then moves to a dye release compound composed of a preformed dye to which is attached a conventional color coupler (para-phenylenediamine) and ballast group. The oxidized developer displaces the dye molecule which is thereby split off. The dye thus becomes mobile and is able to transfer to the image receiver. It is a process that, all parties agree, takes place in two steps and is relatively slow.

The deamination process of Whitmore-Mader also operates in two steps. It uses black and white, not color

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[12] Australian Specification No. 241,147, published February 12, 1959 and "accepted" October 2, 1962; abandoned U.S. Application No. 734,141, filed May 9, 1958; and Canadian Patent No. 602,607, issued August 2, 1960.

developer. However, the initial reaction is similar to that of the splittable coupler process. The developer reacts with exposed silver halide and becomes oxidized. It too moves to an immobile dye group but instead of simply displacing the dye molecule it first oxidizes the dye compound, thereby being itself reduced to its original state. The oxidized dye group, which is called a "quinoneimine," undergoes another reaction. As the Australian specification puts it, "subsequent treatment with, for example, strong alkali causes deamination to take place and the splitting off of . . . " a diffusible dye for transfer to the reception layer. The residue is still ballasted and therefore immobile; it remains behind. Because the split dye segment contains an "amino" group, the process is called "deamination."

In the PR-10 process, according to Kodak, black and white developer is oxidized by exposed silver halide. The oxidized developer moves to the adjacent layer of a ballasted immobile dye release compound, sulfonamidonaphthal, oxidizes it and becomes itself again reduced. The oxidized dye release compound, a quinoneimide, undergoes hydrolysis, resulting in its being cleaved into a mobile, diffusible dye and an immobile ballasted group. Because the split dye contains an amide group, Kodak calls the process "deamination." Kodak asserts that this is the process described in the prior art and that it is a process different in kind from that described in '789; but if it were deemed to infringe '789, then '789 is both anticipated by and obvious in view of that prior art.

Kodak's first argument, that its PR-10 process is different from and does not infringe the process disclosed in '789, has several elements. It asserts that in the '789 process, the dye containing compound, the dye developer, is mobile and moves to the silver halide, whereas the corresponding

compound of PR-10 does not. It further argues that in '789 the dye compound develops silver halide; in PR-10 it does not. In '789 oxidation of the dye compound causes a diffusible dye molecule to be split off; in PR-10 oxidation forms a new immobile compound with dye still attached. The dye splits off only upon the next reaction, hydrolysis. In '789 the oxidation reaction is irreversible; in PR-10 the developer compound is oxidized by the silver halide but then returns to a reduced state after oxidizing the dye compound.

Kodak's analysis of the '789 process is premised on a strained and narrow reading of the patent and it hinges on the terminology used in describing these two processes. If the terms are changed, the analysis fails. First, claim 5 of the patent does not require the dye containing compound and the developing agent to be one and the same. Therefore, it does not require that the dye-containing compound be mobile so as to contact the silver halide. *See infra* note 9.

Claim 5 does not call for development *by* the negative dye developer; rather it states that silver halide is developed "*in the presence of* a negative dye developer." (emphasis added). I credit the testimony of Mr. Rogers that the auxiliary developer is the agent that contacts and develops silver halide. It moves back and forth between the layers of dye developer and silver halide, oxidizing the former and reducing the latter. The fact that claim 8 of the '789 patent specifically calls for the use of an auxiliary developer does not mean that claim 5 is not broad enough to include its use. *See Application of Smythe,* 480 F.2d 1376, 1381-82 (C.C.P.A. 1973); *United States* v. *Adams,* 383 U.S. 39, 48-49 (1966). Thus the patent does not require either explicitly or implicitly, that the dye developer be mobile

before oxidation.[13] Functionally, therefore, the negative dye developer of '789 corresponds to the dye release compound of PR-10, not to the developer or electron transfer agent of the latter.

Second, Kodak's argued distinction between the oxidation processes is as well more apparent than real. The oxidation and cleaving reactions of PR-10 and '789 occur in a similar manner and with one treatment. The parties agree that oxidation of the negative dye developer of '789 results in splitting off a diffusible dye molecule. The reaction takes place in the alkaline processing composition and it is without question a one-step reaction. '789 does not describe a separate alkali step, but the alkali attack is an important part of the reaction.

The oxidation and splitting reactions in PR-10 also take place in the alkaline solution and I find that they occur essentially simultaneously. That is, when oxidized, the dye compound cleaves into dye and immobile by-product virtually instantaneously. I credit the testimony of Mr. Rogers that the reaction mechanisms '789 and PR-10 are the same. Although Kodak describes the PR-10 process in terms of successive oxidation and hydrolysis reactions, those, in fact, occur at the same time; in Mr. Rogers' words, the reactions happen "in one fell swoop."

Finally, there is no difference between the two processes in the manner in which the developer (the electron transfer

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[13] Kodak reads the '789 patent by reference to the language used in the '606 patent describing the positive dye developer process. But contrary to Kodak's assertion, in neither process is it required that the dye developer in fact develop the silver halide. When auxiliary developer is used, it serves as messenger of electrons and the dye developer need not contact the silver halide. Mobility in both patents refers to the ability of the dye developer to cause transfer of image-forming compounds.

agent—the black and white developer of Kodak and the auxiliary developing agent of Polaroid) functions. In both, the developer is alternately oxidized by the exposed silver halide and reduced by the dye containing compound.

Kodak unquestionably spent considerable time and effort to achieve a dye release process and I do not doubt the testimony of Dr. Fleckenstein concerning his experiments in 1969 with sulfonamidophenols and his observation of their reactions. The sulfanamidophenols are in reality, however, another species of negative dye developer. PR-10 in fact employs sulfanamidonaphthols but the parties agree that they are simply a stronger developer. They do not differ in reaction from the phenols. I find that those compounds follow the same reaction path as do the compounds of the '789 patent.

Kodak additionally argues, however, that if PR-10 and '789 are construed to involve the same process, then the process disclosed in '789 was anticipated by the prior art and therefore the patent is invalid. I find that both processes are fundamentally different from those described in the prior art. The Whitmore-Mader proposal requires after oxidation of the dye compound "subsequent treatment with . . . strong alkali" which causes deamination and splitting off of the dye. In contrast, '789 and PR-10 are one-step processes. The Whitmore-Mader process is, moreover, of questionable utility. The dye group specified is a paraphenylenediamine compound and therefore suffers all the disadvantages attendant on the use of that chemical. Mr. Rogers testified that the process has no commercial value for the additional reason that the compounds specified could give rise to extraneous competing reactions that would result in less mobile dyes and a reduced yield of diffusible

dye.[14] Kodak did not, in fact, pursue the deamination proposal in the succeeding continuation-in-part application which resulted in the grant of a patent. Whitmore-Mader does not anticipate '789 nor are the teachings of '789 obvious in view of Whitmore-Mader.

The PR-10 process infringes every element of the claims of the '789 patent that Polaroid has asserted. It is a diffusion transfer process in which exposed silver halide is developed "in the presence of" a sulfonamidonaphthol dye releaser which is a colored silver halide developing agent. In PR-10, the dye releaser or developing agent is oxidized as a function of development and forms an oxidation product, the dye, which is more mobile in the alkaline solution than was the dye releaser, and which transfers by diffusion to the image-receiving layer. It thus infringes claim 5.

PR-10 also fits the added elements of claims 6 through 9. It employs the relationship between dye color and silver halide sensitivity specified in claim 6. The dye releaser of PR-10 is positioned in the photosensitive element in a layer between the silver halide and the support, as required by claim 7. The electron transfer agent of PR-10 is the colorless "additional silver halide developing agent" of claim 8 and development is effected in the presence of an antifoggant as required by claim 9.

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[14] Charles H. Schallhorn, a research associate at Kodak's Color Instant Laboratory conducted experiments with the Whitmore-Mader compounds in preparation for trial. He testified that oxidation and deamination occurred and that these reactions did result in the release of dye. The experiments are not, however, persuasive of the utility of the Whitmore-Mader process. In them, Mr. Schallhorn used materials not specified in the patent applications or patents and which in some instances were not even available in 1972. For example, he used a linking group and dye, sulfonate ester and a urethane linking group, because they are more stable than those used by Whitmore-Mader.

Because '789 does not practice the teaching of Whitmore-Mader, it is neither anticipated by nor obvious in view of those prior art proposals. Because PR-10 does practice the teaching of '789 it infringes the asserted claims of that patent.

IV. *U.S. Patent Nos. 3,594,165 and 3,689,262*

The development of a photograph must occur in a darkroom because exposure of the latent image to light will destroy it. The conventional darkroom has no place in instant photography, however, so Polaroid evolved several means of shielding the negative from light during development. The camera itself served as darkroom in some models; the film unit did in others. The latter solution typically consisted of light-tight external layers, one of which was coated with the image-receiving layer, while the other was designed to be peeled away after development to enable viewing of the picture. Absolute instant photography as envisioned by Dr. Land required a darkroom mechanism by which the film unit would remain intact before, during and after exposure and would not be physically altered after processing. It also required a mechanism whereby development could take place outside the camera and in daylight. The solution was an internal opacifying system, one manifestation of which was used in the SX-70 system.

The basic SX-70 film structure is disclosed in U.S. Patent No. 3,415,644 issued to Dr. Land. It consists of a transparent support on which are coated the neutralizing and image-receiving layers and an opaque support on which are coated the negative layers. The two supports are joined at their edges and the processing composition, which contains an opacifying agent, is spread between them. The darkroom

is thus formed by the opaque support and the opacifying agent. Two fundamental problems inhere, however, in that arrangement. First, because the film is exposed through the same side through which the image is ultimately viewed, a means for reversing the negative image must be incorporated. Second, the opacifying agents specified in the patent, titanium dioxide, a white substance, and carbon black, turned out in practice to be unsatisfactory singly and in combination. Titanium dioxide did not provide adequate opacification; carbon black, even in combination with titanium dioxide, provided an unsatisfactory grey background for viewing the picture. The first problem was solved in the SX-70 system by incorporating a mirror into the camera, the second, by departing from the teaching of the patent and synthesizing an opacifying agent which temporarily bars light and is then "decolorized."

While reviewing his own work on the SX-70, Howard Rogers, on New Year's Day, 1968, thought of an alternative to its film structure. His idea was to coat both the positive and negative elements on the same transparent support but to place between the image-receiving and photosensitive layers separate white pigment and carbon black layers. The white layer was the background for viewing and the white and black layers in combination, one of the walls of the dark room. To form the other wall of the darkroom, Mr. Rogers included carbon black in the processing composition. The processing composition was spread not between the positive and negative layers but between a second transparent support and the photosensitive layers.

This structure permits exposure through the separate transparent sheet and viewing through the support coated with the laminate. The arrangement results in a right-reading image and thus eliminates the need for any reversal

mechanism. The positioning of the pod and processing composition permits the use of carbon black as the opacifying agent and eliminates the need for an expensive decolorizing compound. Mr. Rogers points out that his process is a much simplier opacification system than that employed in SX-70. He suggests two additional advantages. First, spreading the processing goo on the outer side of the negative layers means that the dyes do not have to travel through it; the structure therefore better tolerates bubbles in the processing composition. Second, using a preformed white layer permits viewing against the white background of the image as it forms. Mr. Rogers's structure represents a neat solution to the competing requirements of a darkroom for processing and at least one transparent support for exposure. It was not used in the SX-70 because by the end of 1967 the work on the SX-70 was substantially completed and a considerable investment had been made in production machinery.

Mr. Rogers's discovery is disclosed in U.S. Patent Nos. 3,594,165 and 3,689,262, both of which issued on September 5, 1972 and which the parties have treated as substantially identical. '262 is a continuation-in-part of '165. The specifications call for coating on one transparent support both the image-receiving and photosensitive layers. The sandwich is completed with a "transparent sheet element superposed coextensive the contact surface of the laminate" and affixed along the edges to form an integral structure. The patents further disclose that the laminate contains between the image-receiving and photosensitive layers "a processing composition permeable opaque layer." That opaque layer is preferably two discrete layers, one containing titanium dioxide for viewing the image against a white background and one containing an opacifying agent such as carbon black for absorbing light.

The pod is located so that the processing composition is spread "on the surface of the laminate distal the transparent support," that is, between the laminate and the separate transparent sheet. The processing composition contains, in addition to the chemicals necessary to accomplish development and stabilization, an opacifying agent which, again, may be carbon black. The patents specify that exposure is made through the separate sheet that, in conjunction with the laminate containing the separate opaque layers, forms a light-tight envelope in which the development process can occur. After exposure, the processing composition spreads and penetrates through the negative layers to initiate the dye diffusion process. The dye transfer image may then be viewed as it is being formed through the transparent support and against the white layer.

The patents suggest the inclusion of a polymeric acid layer "positioned intermediate the transparent support layer and next adjacent essential layer." Alternatively, the "polymeric neutralizing layer" may be "carried by the [separate] transparent sheet . . . next adjacent to the photosensitive laminate." In such a structure the acid layer may be insulated from "deleterious interaction with the remainder of the photographic system during storage, exposure and initial processing" by a timing layer.

Polaroid has asserted claims 3, 5 and 6 of each patent against Kodak. Each of these claims incorporates by reference claim 1 of the respective patents. Claim 1 describes a composite diffusion transfer color process film unit comprised of three parts. The first, subpart (a) in the '165 patent, calls for a laminate that contains a transparent support on which are coated, in order, a dye image-receiving layer, a processing composition permeable opaque layer, a silver halide layer, and dye image-forming layers. The

second, part (b), describes a second transparent support of a size equal to the first and opposite the laminate. The third, part (c), calls for a pod containing processing composition and an opacifying agent positioned so that its contents are spread between the laminate and the second transparent support.

Claim 3 adds that the opacifying agent in the processing composition is present in sufficient quantity and the opaque layer of subpart (a) "is effective to prevent exposure" of the silver halide layers in the presence of radiation actinic to development. Claim 5 provides that the opaque layer "is actinic radiation reflective." Claim 6 specifies that it is comprised of titanium dioxide in a polymeric binder.

Kodak claims that every element of the 165/262 film structure is old. In particular, it alleges that U.S. Patent No. 3,415,645, an earlier Polaroid patent, describes most of the features of the patent in suit. Those features of 165/262 not described in '645—the concepts of incorporating an opacifying agent in the processing composition and of using separate black to white strata—are, it asserts, both taught in the prior art. Kodak also argues that the 165/262 patents are invalid under 35 U.S.C. § 112 for failing to disclose the best mode known to Mr. Rogers for preparing the layers of the film unit. Finally, Kodak denies that its PR-10 film infringes these Polaroid patents.

The earlier '645 patent, which was before the Patent Examiner during the prosecution of the patents in suit, describes a film unit that has one opaque layer which serves both as light barrier and white background for viewing, and an opaque flap which is superimposed on the negative layers after exposure. The pod is located so that the processing composition is spread between the positive and negative layers.

Kodak points to identical drawings depicting the arrangement of layers of the '645 and 165/262 patents, respectively,

and argues therefrom that before processing the film units are identical in arrangement and functioning. For example, both are exposed and viewed from opposite sides and both permit viewing of the image as it develops. Neither requires peeling to view the picture and both are described in their respective patents as "integral." According to Kodak, then, the only difference between them is the manner in which the "delayed" opaque layer is constructed after exposure. The '645 patent uses an opaque flap; the 165/262 patents use carbon black in the processing composition. Since the latter mechanism is well known in the prior art, Kodak argues that this modification of '645 does not result in patentable invention.

The difficulty with Kodak's argument is that the evidence does not support the premise of identity between the '645 and 165/262 patents, even before processing. Dr. Trautweiler, Kodak's expert, testified and I so find that despite the similarities of the drawings, '645 does not disclose the photosensitive laminate of 165/262. As Mr. Rogers explained, although the corresponding layers are similarly arranged, they do not adhere to each other in the same way. In addition, the '645 patent specifies a single opaque layer to act as both light barrier and white background for the final picture. I find that the specifications of 165/262 and claims 3, 5 and 6 of those patents, read together, clearly provide for separate, preformed black and white layers.

The use of separate black and white strata constitutes a significant difference. Combining black and white into one layer creates optical problems because too much white provides inadequate opacification and causes the light to be attenuated to the negative, resulting in fogging. Adding sufficient black to prevent damage to the negative is likely to cause the picture to lose white highlights and look muddy.

In contrast, the 165/262 patents teach that separating the black and white layers provides opacification without compromising the clarity of the picture. Placing the black layer behind the white minimizes fogging. None of the prior art cited, including, of course, the '645 patent, refers to adjacent preformed black and white layers, one of which has an absorptive and the other a reflective background.

Kodak concedes that 165/262 are different from '645 during and after processing. The difference between 165/262 and '645 before processing is greater, however, than the mere substitution of carbon black for the opaque flap. Unquestionably, the addition of carbon black to the processing composition was known even as a means of opacification. But the issue is whether in view of the cited prior art, the similarities between the subject matter of 165/262 and the prior art are such that the subject matter of 165/262 as a whole would have been obvious. *Thomas & Betts Corp.* v. *Litton Systems, Inc.*, 720 F.2d 1572, 1579 (Fed. Cir. 1983); *Kimberly-Clark Corp.* v. *Johnson & Johnson*, No. 83-1066 (Fed. Cir. Oct. 9, 1984). I find that they were not.

The use of opacifying agents in the processing composition is taught in three patents relied on by Kodak: U. S. Patent Nos. 3,053,659 and 2,607,685 to Land; and U. S. Patent No. 3,309,201 to Friedman. All relate to peel-apart film units. None disclose the other relevant and significant features of the 165/262 film unit.

The '685 patent is cited as an early example of the concept of distributing an opacifying agent from a rupturable pod to create a light shield for out-of-camera processing of the film unit. The patent does not, as Kodak concedes, teach the inclusion of the opacifying agent in the processing composition. Indeed the film unit of that patent has three pods, one each for developer, white pigment and black dye.

I credit the testimony of Mr. Rogers that this multiple pod arrangement is wholly unsuitable to integral films.

Further, the film units of the '659 patent are primarily for x-ray images. The patent clearly teaches the technique of providing a delayed opaque layer by superimposing an opaque cover sheet over the exposed surface or including lamp black, also known as carbon black, in the processing goo. But the film units depicted in the patent are not arranged and do not function in the manner of the 165/262 film units. With none can the forming of the image be viewed. More specifically, the films of Figures 1-5 in the '659 patent do not have the photosensitive laminate of 165/262 nor the opaque layers permeable to the processing composition. Figure 10 represents a transparency that may be viewed only after both the top and bottom opaque layers have been stripped off. Contrary to Kodak's contention, the '659 patent does not teach the functional equivalent of an opaque flap and opaque goo. It uses an opaque envelope for processing the transparencies, not opaque flaps. Moreover, if opaque goo were substituted, the unit would be nonfunctional. A transparency by definition cannot be shielded by a permanent opaque layer.

The Friedman '201 patent, where the use of an opacifying agent in the processing composition is also taught, relates to film units for making 35 mm transparencies. Its disclosure of opaque processing composition between the positive and negative layers does not suggest the 165/262 film unit.

Finally, it is undisputed that Kodak in October 1969 [15] applied for a United States patent on a film unit identical

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[15] The first application for what became the '165 patent was filed in May 1968. The patent issued on a later application, filed in April 1969, which was a continuation-in-part of that filed in 1968.

to that of the 165/262 patent. The application, which was approved by Kodak management, was based on an "Invention Conception" by Harold E. Cole, a patent attorney at Kodak. Mr. Cole had extensive knowledge of the prior art and had spent considerable time studying Polaroid patents to find a "non-infringing way" to make an instant film. He distinguished this film structure over the prior art including, in particular, the Land '645 patent and pointed to precisely the same advantages over the prior art on which Mr. Rogers now relies. Kodak learned in early 1970 of Mr. Rogers's applications which had been filed in 1968. Kodak management consulted outside patent counsel and engaged in considerable effort to obtain a United States patent, filing altogether three applications on the same film structure. The '165 patent issued in July 1971; Kodak finally, and on the advice of outside patent counsel, abandoned its United States patent application in December 1971.

Although Kodak's position at the time of its own application concerning the patentability of the 165/262 film structure is not decisive on that issue, it is some evidence that claims 3, 5 and 6 of the Rogers patents are valid against the prior art.

Finally, Kodak contends that the 165/262 patents are invalid under 35 U.S.C. § 112 because they do not disclose the best mode known to Mr. Rogers of preparing the photosensitive layers. The statute requires that the patent set forth the "best mode contemplated by the inventor of carrying out his invention." The arrangement of the layers is important in controlling the diffusion of the dye developers. Because the dye developers are mobile in the processing composition, the laminate must be constructed in such a manner that the mobile dye developer remains in the area

of its associated exposed silver halide. The developer associated with unexposed silver halide, however, must be able to diffuse to the image receiver. Lack of control over the dye developer results in a defective color image. One solution lies in the addition of interlayers which slow the progress of the dye developers or barrier layers which temporarily halt it. It is the alleged failure to specify the use of barrier layers and the precise composition of the barrier layers appropriate to the laminate disclosed that Kodak argues runs afoul of section 112.

I credit Mr. Rogers' testimony that he thought interlayers sufficient and that he considered gelatin to be the preferred interlayer material for this film unit. That is indeed what the patents recite. I further find that gelatin will produce satisfactory, albeit not perfect, color separation because the use of auxiliary developer, also specified in the patent, will precipitate the nonreacted dye developer in its original layer.

In an ongoing effort to improve interlayers, Polaroid experimented with a number of latex materials, including one known as Rhoplex AC-61. Polaroid used it in the commercially available form and also with the addition of thickeners. Mr. Rogers did not consider it the best interlayer material. Rather, in experimenting with it and other materials he found that what worked in the laboratory turned out not to be usable with the production machines. Accordingly, I find that Polaroid has not violated section 112 nor has it deliberately omitted known information concerning the effect of thickeners which would render the patent unenforceable.

Kodak does not deny that the PR-10 film unit contains each element of the asserted claims. It denies infringement, however, on the ground that each of the PR-10 features is

found in the prior art. Kodak cannot avoid infringement by suggesting that individual components of PR-10 are disclosed in various prior art references. *Morrill* v. *Automatic Industries, Inc.*, 93 F. Supp. 697, 708 (W.D. Mo. 1950). It is the unique layer and support arrangement described in the asserted claims which are included in the PR-10 and this arrangement is not described in the prior art. I find that the PR-10 film infringes claims 3, 5 and 6 of the 165/262 patents.

V. *U.S. Patent No. 3,770,439*

Mordants are chemicals that fix dyes in a substance by combining with the dye to form an insoluble compound. The dyes used in instant photographic processes are, by definition, soluble and therefore tend to wander both toward and away from the image-receiver. Accordingly, a mordant must be included in the image-receiving layer to form and retain an image. U.S. Patent No. 3,770,439 relates to a class of polymeric mordants which include in their structure specified repeating units [16] that are described in the patent and denoted as "Formula A."

In the fields of photography and textile printing, mordants have been used for a long time to bind dyes; and numerous mordanting compounds have been produced commercially and disclosed in the literature and in patents.

Researchers at both Polaroid and Kodak sought to adapt some of these known compounds to integral film. They

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[16] A polymer is a very large molecule that consists of small units, linked together as in a chain. The small units, the links of the chain, are called repeating units. A polymer that consists of a series of identical repeating units is called a homopolymer; one that consists of two or more different repeating units is a copolymer. A repeating unit before polymerization is a monomer or monomeric unit.

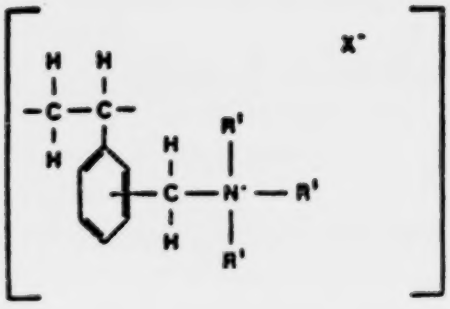
found however that diffusion transfer in an integral film unit imposed additional and far more rigorous requirements on the mordant than did the "matrix printing" process. In the latter, no diffusion through several layers takes place. Color prints are made from three preformed printing matrices that are dipped in different color dyes and one after another pressed directly against a receiving sheet that contains a mordant. The receiving sheet is immediately exposed to air to dry.

By contrast in any instant process the photosensitive and image-receiving layers are contained within the same sandwich, and all three dyes travel at the same time in an alkaline environment through several layers before reaching the image-receiver. Although peel-apart film is separated and the image-receiving layer exposed to air, such is not the case with integral film. In an integral film unit even after the dyes reach the image-receiver they are subjected to ongoing chemical reactions. In addition, the final image remains in a wet environment as the film unit slowly dries over a period of weeks following exposure and development. Thus to be useful for an integral film unit, a mordant had to work with three dyes at once; it had to be strong enough to attract the dyes to the image-receiver and to prevent their being pulled out by competing chemical reactions; and it had to hold the image stable in a wet environment.

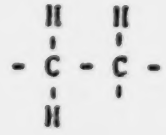
Polaroid encountered numerous difficulties in meeting these mordanting requirements during the development of the SX-70 film, and in the summer of 1970 Dr. Land assigned Lloyd D. Taylor, the Laboratory Manager of Polymer Research, to find a mordant that would hold the dyes in an integral film unit. Dr. Taylor directed his staff to evaluate several compounds, including polymers of certain vinyl benzyl quaternary ammonium salts. He had worked

with such compounds in the early '60s. Although he had found some of them promising, he put them aside as they were not then commercially available. Under Dr. Taylor's direction, his staff tested a number of polymers and obtained far better results with compounds that contained the vinyl benzyl quaternary ammonium mixture than with those that did not.

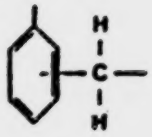
U.S. Patent No. 3,770,439, filed on January 3, 1972, and issued on November 6, 1973, describes Dr. Taylor's discovery of the excellent mordanting qualities of polymers that include repeating units of vinyl benzyl quaternary ammonium salts of a particular construction. The repeating unit is denoted "Formula A" and its general chemical structure is shown as follows:



The name of the compound signifies its constituent parts. "Vinyl" is the two carbon, three hydrogen part of the structure at the top left:



The lines to the left and right of the carbon atoms represent bonds that link this repeating unit to others. The "benzyl" is comprised of the benzene ring [17] with one carbon and two hydrogen atoms attached:




Bonded to the benzyl group is the "quaternary nitrogen" atom represented by the symbol $N^+$. "$X^-$" represents an anion that is covalently bonded to the positively-charged nitrogen to form a salt. The quaternary nitrogen bonds directly with three chemical groups in addition to the benzyl group. The patent refers to those three as "R groups" and in the representation of Formula A uses the shorthand symbol $(R^1)_3$.

The specifications and the claims in issue state that "each R can be the same or different substituent chosen from the group consisting of hydrogen, hydroxyl, alkyl radicals having from one to six carbon atoms, alkoxy radicals having from one to six carbon atoms, or alkanol radicals having one to six carbon atoms. . . ." Only the alkyls are implicated in this lawsuit.

Alkyl groups are a series of compounds of hydrocarbons.[18] They are named in accordance with the number

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[17] A benzene ring is a structural arrangement of six carbon atoms linked by alternate single and double bonds in a planar symmetrical hexagon.

[18] A hydrocarbon is a compound that contains at least one carbon and four hydrogen atoms, but atoms of no other type.

of carbons they contain. The first six members of the series are the "lower" alkyls and they include methyl carbon (1), ethyl (2), propyl (3), butyl (4), pentyl (5), and hexyl (6). An "alkanol" and "alkoxy" are "substituted" alkyls where one of the hydrogen atoms is substituted by a nonalkyl such as oxygen.

Mordants bind dyes through various forces. One is the attraction the typically positively-charged (cationic) mordant has for the negatively-charged (anionic) dye. Another, known as Van de Waal's forces, involves the preference that different hydrocarbons have for each other as compared to the water in which the dyes are dissolved. The hydrocarbon parts of the dye are attracted to the hydrocarbon parts of the mordant, resulting in "hydro-phobic bonding" of the two. The problem for the designer of a mordant is to achieve the optimum balance of these forces for the particular dye, including, of course, matching the water sensitivity characteristics of the mordant to that of the dye.

Variability in mordant water sensitivity relates directly to mordanting qualities. Because the dye is in water, the mordant must be hydrophilic enough to react with the dye, but hydrophobic enough to form a mordant complex that is insoluble. The mordant must also correlate with the water sensitivity of the dye. It should not pull out the dye instantly and thus clog the surface of the image receiver, but it should permit uniform penetration of the image layer by the dye.

Quaternary ammonium salts are very water sensitive. Dr. Taylor discerned that their water sensitivity could be changed by varying the number of carbon atoms in the R groups, but he also realized that longer-chain alkyl groups would create complications. With an increase to, for ex-

ample, 8 carbons, micelle formations, aggregates of small molecules that are not polymers, may occur in the image layer and cause haze or similar optical problems. Accordingly, in July 1970 Dr. Taylor directed his staff to evaluate polymers containing lower alkyl group vinyl benzyl quaternary ammonium repeating units,[19] which ultimately led to the patent in suit.

The parties completely disagree about the scope of the disclosure of the '439 patent. Polaroid asserts that it concerns both homopolymers and copolymers of Formula A. Kodak would limit the claims to homopolymers. Polaroid insists that the patent is directed specifically to integral film. Kodak reads it to describe polymeric mordants conforming to Formula A generally. I find that the patent describes homopolymers and copolymers of Formula A as mordants for integral film.

First, Polaroid's research and experiments were directed to a variety of copolymers of Formula A. In 1970 Dr. Stanley Bedell grafted a Formula A polymer to a polyvinyl alcohol homopolymer. Dr. Taylor tested it on August 31, 1970 and found that it worked well. In 1971 Dr. Jurgen Grasshoff made a straight chain copolymer that included a Formula A polymer. Also in 1971 Polaroid evaluated on a commercial scale a mixture that included a polymer of Formula A and another mordant, poly-4-vinyl pyridine homopolymer. All of these experiments proved the mordanting ability of Formula A. The last-mentioned test showed Formula A to provide faster dye transfer and higher dye density, particularly with cyan, than did the mordant containing only the poly-4-vinyl pyridine.

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[19] The experiments in fact concentrated on copolymers with methyl and ethyl groups and did not include the higher groups of the lower alkyls.

Second, the language of the patent clearly indicates both homopolymers and copolymers. The specifications refer to "a polymeric material including a polymer of . . . [Formula A]. . . ." They describe the invention as comprising "a polymer of Formula A copolymerized with other polymeric materials. . . ." [20] The patent as a whole thus informs the claims which refer to a "polymeric layer comprising a polymer conforming to Formula A. . . ."

Similarly, the descriptions of the film units in the patent persuade me that the mordant disclosed is for integral film. All of the examples use structures of integral film.

Polaroid accuses Kodak of infringing claims 1, 7, and 8. Claim 8 is incorporated by reference into claim 7.

Claim 1 describes an image-receiving element that includes a Formula A mordant with specified R groups as quoted and described above. Claim 7 describes a diffusion transfer product, including "a photosensitive system comprising at least one selectively sensitized silver halide layer integrated with a dye image providing material, processing composition . . . and an image-receiving element . . ." that conforms to claim 1. Claim 8 adds that the photosensitive system comprises a blue, a green, and a red-sensitive silver halide layer integrated, respectively, with a yellow, a magenta, and a cyan dye image-providing material.

Kodak contends that claim 1 is anticipated, pursuant to 35 U.S.C. § 102(a) and (b); that all claims asserted are invalid as obvious, pursuant to 35 U.S.C. § 103; that the

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[20] Kodak presented considerable evidence concerning the conventional method of indicating a copolymer, but it was inconsistent. The parties agree that the brackets surrounding the formula denote it as a repeating unit. Kodak's witnesses gave, and its own patent notation reflected, varying means of signifying that the repeating unit relates to a homopolymer or copolymer. Accordingly, I accept Dr. Taylor's interpretation of his own language.

patent is unenforceable for Polaroid's breach of its duty of disclosure; and that, in any event, the PR-10 mordant does not infringe.

Kodak's obviousness argument relies on a number of foreign and United States patents as well as on an article. They include two patents of Dr. Hyman Cohen, a Kodak scientist, French Patent No. 2,003,003, and Belgian Patent No. 734,082; Russian Author's Certificate No. 165,378; British Patent No. 1,022,207, U. S. Patent No. 3,773,509, plus a 1957 article by Messrs. Jones and Goetz, entitled "p. Vinylbenzyltrialkyl Ammonium Salts in Vinyl Polymerization."

The parties agree that the level of skill in this art is very high. A person of ordinary skill would have a Ph.D. degree in organic chemistry and several years in photography systems with a fair exposure to instant photography and polymers.

I find initially that the U. S. '509 patent is not prior art. It was filed on March 9, 1971, and thus subsequent to the invention date of, at the latest, August 1970 to which the '439 patent is entitled.

All of the remaining references do in some manner describe mordants with repeating units that conform to Formula A; the French patent discloses a generic structural formula into which Formula A fits. However, all are directed specifically to matrix printing. None describes the use of the mordant disclosed in an instant, let alone, integral film unit.

French Patent No. '003 discloses a formula with numerous variables. Even Kodak's expert, Dr. Donald Arthur Smith, agreed that the formula permits the construction of a very large number of compounds. None of these are vinyl benzyl quaternary ammonium compounds. Nothing

in the patent suggests the particular utility of the lower alkyls. And the patent does not teach that any of the mordants disclosed are useful in integral film units. Indeed, in later applications by Dr. Cohen and others for patents covering a specific class of vinyl benzyl quaternary ammonium mordants for instant photography, Dr. Cohen and his co-inventors distinguished those compounds which included some Formula A polymers from the '003 disclosures. They further claimed them to be patentable over U. S. Patent No. 3,709,690, the counterpart of French '003.

The Belgian '032 patent clearly does include data on the mordanting performance of three Formula A polymers, but again in the context of matrix printing.[21] Moreover, the patent teaches not the utility of Formula A, but the addition of "reactive anchoring" groups to prevent matrix stain, the diffusion of the mordant into the matrix. Reactive anchoring groups react chemically with another polymer included in the gelatin to become immobilized. Such a reaction is both unnecessary and highly undesirable in an integral film unit. It would add yet another reaction that is difficult to control and one that would tend to fuse all the polymers in the image-receiving layer. Reactive anchoring groups are outside the scope of the '439 patent and the references in the Belgian patent to formula A polymers in connection with the disclosure of reactive anchoring groups do not teach the particular use of Formula A disclosed in the '439 patent. Kodak so viewed the Belgian patent on an earlier occasion. In an application relating to a group of vinyl benzyl quaternary ammonium mordants for instant film, that led to U. S. Patent No. 3,625,694, Dr. Cohen again

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[21] One, Compound VIII, was used as a control and performed poorly.

claimed these compounds to be patentably distinct over the Belgian disclosures.

In a similar vein, the British '207 patent teaches the use of a particular "hydrazinium" anchoring group as copolymer with a Formula A compound. It, too, is directed to matrix printing. It, too, is undesirable in instant photography, and neither Polaroid nor Kodak has ever used for commercial instant film a mordant that included such an anchoring group.

The disclosure of a Formula A mordant in Russian Author's Certificate 165,378 is, like the disclosure in the other references, directed to a matrix printing process for movies. This process, both experts agreed, is even more cumbersome than the ordinary matrix printing process and teaches nothing about mordants for instant film.

Kodak argues with respect to the Russian Author's Certificate that it not only teaches the disclosure of '439 but, in fact, anticipates claim 1 of the patent. But claim 1 defines the image layer of an integral film unit; it is not the image layer of any photographic diffusion process. It is not, therefore, anticipated by the Russian Author's Certificate.

The Jones and Goetz article discloses that a Formula A polymer can be used as a mordant in invisible ink which becomes visible when the paper is treated with indigo dye. The authors also found one Formula A compound to mordant an acidic dye in the context of textile printing. Like the other references cited, it is inapposite.

Kodak's argument throughout depends on glossing over the distinctions between matrix and instant dye transfers, and on its assertion that the utility of a mordant for one process necessarily suggests its utility for another. The fact that one skilled in the art would consider as possible candidates in an extensive search the mordants disclosed in

these references does not meet the standard of obviousness under 35 U.S.C. § 103. *In re Yates*, 663 F.2d 1054, 1057 (C.C.P.A. 1981), *Application of Goodwin*, 576 F.2d 375, 377 (C.C.P.A. 1978), *aff'd without opinion*, 599 F.2d 1060 (C.C.P.A. 1979), *Trio Process Corp.* v. *L. Goldstein's Sons, Inc.*, 461 F.2d 66, 72 n.18a (3d Cir.), *cert. denied*, 409 U.S. 997 (1972).

I am persuaded by the evidence that the differences between matrix printing and instant photography are such that the knowledge of one is not directly transferable to the other. Both Polaroid and Kodak tried to adapt for instant photography mordants used in matrix printing. Both failed. Because diffusion transfer, particularly in an integral film, imposes substantial additional requirements on mordants, none of which are considered or addressed in the cited references, I find that those references do not render the '439 patent invalid under 35 U.S.C. § 103.

Kodak asserts that the patent is unenforceable because Polaroid allegedly withheld from the Patent Office material information concerning the usefulness of Formula A polymers as mordants. Specifically it claims that Polaroid knew that these mordants have poor light stability and that they do not function well with yellow dye. I credit the testimony of Dr. Taylor that the light stability tests on which the argument is based and which were conducted in 1965 with Polacolor film produced results that were erratic and, at best, inconclusive. As for the contentions concerning yellow dye, they are based on one manifestation of Formula A. Others, with different sized R groups, provide good mordanting with yellow dye as well. Polaroid did not, therefore, withhold information such as to render the patent unenforceable.

The issue of infringement depends first on the scope of the '439 patent. The mordant of PR-10 is a copolymer, and Kodak asserts that the patent is limited to homopolymers of Formula A. Since I have earlier addressed this argument, *see infra* p. 57-58, and found the '439 patent to include copolymers of Formula A as well, this defense fails.

The second argument centers on the composition of the PR-10 mordant. The parties agree that it has three different repeating units—styrene, divinylbenzene and vinylbenzyldimethylbenzyl ammonium chloride. Polaroid contends that the first two repeating units are not mordants at all. According to Polaroid, the styrene balances the hydrophilic/hydrophobic properties of the polymer and the divinylbenzene serves to cross-link all three of the repeating units. The third unit, Polaroid says, is the mordant of the polymer and it infringes '439. Kodak insists that the compound cannot be so compartmented, that its mordanting properties are due to the combined effect of all the parts of the polymer. I am persuaded from the evidence that the quaternary nitrogen component of the PR-10 mordant is the one that performs the function of capturing and immobilizing the dye. I am equally persuaded, however, that the other two repeating units are essential to achieve the good mordanting quality of the whole.

Finally, Kodak contends that the vinylbenzyldimethylbenzyl ammonium chloride is a structure not disclosed or claimed in the '439 patent. Again, the parties agree that the allegedly infringing polymer is a vinyl benzyl quaternary ammonium structure with 3 R groups. Two of the R groups are admittedly methyls and therefore lower alykls that fit squarely within the asserted claims. The third is a benzyl group; it includes a 6 carbon benzene ring plus an additional carbon. It admittedly is not a lower alkyl and it

does not fit the language of the patent. Polaroid asserts, however, that the benzyl is a substituted alkyl which is equivalent to a six-carbon hexyl. Alternatively, it argues that under the doctrine of equivalents, the PR-10 mordant infringes the patent in suit because the dimethylbenzyl quaternary ammonium repeating unit achieves results equivalent to those achieved with Formula A hexyl.

The evidence at trial disclosed considerable disagreement about the terminology used to describe the benzyl R group. Dr. Taylor testified, and Kodak's experts agreed, that strictly speaking it is a substituted alkyl consisting of a one carbon methyl substituent and a six carbon benzene ring. The evidence also showed that the presence of the benezene ring transforms this R group into an aryl. I find that both terms are correct. A substituted alkyl is an alkyl in which one hydrogen has been replaced by a nonalkyl, a definition that encompasses the R group in issue. An aryl compound is one which has the benzene ring structure, a definition that also includes this R group. The '439 patent claims only "alkyl radicals having from one to six carbon atoms" and certain specified substituted alkyls not including benzyl. Accordingly, I conclude that the choice of nomenclature does not dictate the result. The benzyl R group is simply not claimed.

The question remains whether the PR-10 mordant infringes under the doctrine of equivalents.

The parties agree that under the doctrine of equivalents infringement may occur if the defendant's product or process performs the same function in the same way to obtain substantially the same result as the product or process disclosed in the patent. *Graver Tank and Mfg. Co.* v. *Linde Air Products Co.*, 339 U.S. 605 (1950); *Rich Products Corp.* v. *Mitchell Foods, Inc.*, 357 F.2d 176, 182 (2d Cir.), *cert.*

*denied*, 385 U.S. 821 (1966). The burden of establishing equivalence is on the plaintiff.

A comparison of the PR-10 mordant, or even of its quaternary nitrogen component, with Formula A discloses that both unquestionably perform the same mordanting function. I find also that both quaternary nitrogen repeating units perform that function in substantially the same way, although I credit the testimony of Dr. Smith that the PR-10 compound is a stronger mordant than any manifestation of Formula A. If the comparison is between the PR-10 mordant as a whole and Formula A, they clearly do not function in the same way because the divinyl benzene component of PR-10 permits cross-linking of the polymer and results in a latex compound.

Regardless of how they are viewed, the quaternary nitrogen repeating units of PR-10 and the '439 patent do not, in any event, achieve the same result. As discussed earlier, the reason for limiting the number of carbon atoms in Formula A to six was Dr. Taylor's perception that a larger number would cause optical problems. The PR-10 mordant confirms that understanding. It is a cloudy dispersion and does cause optical interference. Thus, while it achieves good mordanting results, the PR-10 compound does so with precisely the disadvantage predicted for compounds with more than six carbons. Kodak solves the optical problem by incorporating matching refractive indices into the gelatin in which the mordant is mixed—a solution wholly outside the scope of '439. Even comparing the mordanting results of dimethyl-hexyl and dimethyl-benzyl R group polymers, I am not persuaded that they are equivalent. The tests performed by Polaroid to show equivalence do not succeed. The results were different even though the hexyl used was not a straight chain R group but a ring structure.

The PR-10 mordant does not, therefore, infringe any of the claims of the '439 patent asserted. It does not read on the claims nor has Polaroid shown equivalence.

In summary, I find that the '439 patent is valid, but that the accused mordant does not infringe any claims asserted.

## VI. *U. S. Patent No. 3,578,540*

Photographic prints, whether produced by conventional means or by an instant process, whether on a single support or consisting of a laminate, have a tendency to curl and to distort.[22] Although the parties disagree about the precise manner in which curl or distortion is induced in integral film units, they agree that it is the presence of moisture at some point in the life of the film unit that may bring about a temporary or permanent deformation of the print. The patent in suit, U. S. Patent No. 3,578,540 to Dr. Land, describes an integral film unit "especially designed to resist distortion due to physical changes, particularly the quantity and distribution of moisture in laminae comprising the [film unit]. . . ." The evidence shows and the patent points out that the effects of moisture on the dimensional integrity of the supports are exacerbated in an integral film unit because the quantity and distribution of moisture within the film units continue to change for a relatively long period of time.

It was well known in the art that curl and distortion are caused by uneven stresses on the supports. It was also known that these stresses are caused by the absorption of moisture by the supports and subsequent drying. The supports tend to respond unequally to the moisture itself and to the presence of alkali therein. The photographic layers also absorb moisture and swell as a result. Upon drying,

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[22] The term "curl" refers to a uniform departure from planarity; "distortion" is a non-uniform change.

the layers shrink and thus also exert forces, uneven forces, on the supports.

Dr. Land hypothesized that in an integral film unit the direct and indirect impact of moisture operates initially on the inside surfaces of the supports, and if the impact or stress on the supports is balanced the problem of curl is solved. That is, identical supports arranged in such a manner as to respond equally to what is contained between them is the answer. He thought such a balanced response could be attained by using supports that have both good mechanical stability and extremely low permeability to water and water vapor. Nonabsorption of water by the supports eliminates that distortion caused by the presence of moisture. Thus, the patent discloses that "a generally flat, undistorted and dimensionally stable, yet flexible" film unit can be achieved by using supports which are "symmetrically disposed with respect to the surrounding atmosphere and dimensional changes" and which are made of "materials that exhibit low water absorption and low water transmission rates."

The specifications describe a film unit that uses symmetrical supports. Symmetry in this context is described as substantially equal reaction of the two supports to the presence of moisture. The essential characteristic of the supports, according to the patent, is that they be "relatively impermeable to and non-swellable by moisture." Suitable materials include alkaline solution impermeable materials such as vinyl chloride polymers; polyesters such as polymeric films derived from ethylene glycol terephthalic acid, for example, polyethylene terephthalate, polycarbonates, phenylene oxide polymers, acrylics, polyethylene and polypropylene." The patent cautions that the list is exemplary and not exhaustive, and that in fact other materials with

superior water absorption qualities are known. Although these materials may not have suitable optical qualities for the transparent support, they are ideally suited for use as the opaque support layers. The example in the patent uses polyester, i.e., polyethylene terephthalate. Polyester is also the material used in SX-70 and PR-10 film units.[23]

Polaroid asserts infringement of claims 5, 6 and 8. Claims 5 and 6 incorporate by reference claims 1 and 4, and claim 8 incorporates claim 7.

Claim 1 describes a laminated photographic product comprised of two dimensionally-stable support layers, at least one of which is transparent, but both of which have substantially the same physical responses to the presence of moisture in the image-containing layer sandwiched between them. The image-containing layer includes a silver halide emulsion layer; an intermediate lamina comprising a polymeric film-forming material and an opacifying agent; and an image-receiving layer containing a dye-diffusion transfer image. Claims 4 and 5 add the requirement that all support layers be formed of the same polymeric material and have substantially the same physical characteristics, and that they be relatively impermeable to water vapor. Claim 6 specifies that they be made of polyester. Claims 7 and 8 are similar and reiterate the support layers' relative impermeability and similar physical response to moisture.

Kodak challenges the validity of the patent on the ground that it is anticipated by Kodak's BIMAT film. It further asserts that the only new aspect of the film unit described is the selection of the support materials. According to Kodak, the choice of polyester is obvious, as is the use of symmetrical supports. Kodak also denies infringement.

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[23] The remainder of the patent details the various layers of the laminate which are not claimed to be new.

The initial dispute between the parties concerns the nature of the disclosure. Whereas Kodak views the patent as teaching nothing more than the choice of polyester as the material of choice, Polaroid defines the invention by reference to specific qualities of the supports—they must be symmetrical and substantially impermeable to moisture.

Polyester was developed by DuPont and it became available for use as film in 1955. DuPont proclaimed it as superior to cellulose acetate in optical clarity, durability, dimensional stability and low moisture sensitivity. These claims were unquestionably true and the photographic industry began using a polyester film base in the late 1950s in various applications. It is undisputed that for some time before the invention of the '540 film unit both parties employed polyester and prescribed it in a number of patents, including patents pertaining to instant photography.[24] It is also clear, however, that for reasons hereafter set forth, neither party considered using two polyester supports with integral film units until Dr. Land did so.

As noted earlier, it was well known long before Dr. Land conceived the idea of symmetrical supports that one cause of curl and distortion was the uneven drying of print or film unit components and the consequent uneven forces on the support. The evidence shows that the conventional response was to provide a balance against these forces. An example of such balancing used in conventional film was coating the side opposite the photographic layers with "pelloid," a material which expanded and contracted in a manner similar

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[24] These patents are cited in Kodak's section 282 notice and include U.S. Patent No. 3,059,659; Canadian Patent No. 682,226; U.S. Patent No. 3,438,775; U.S. Patent No. 3,330,655; U.S. Patent No. 3,253,915.

to the photographic layers. It thereby opposed the forces generated by the drying of the photographic layers.[25]

This means of balancing is not useful, however, in integral film units—structures kept together in a closed system before, during, and after development, which remain in contact with and respond to not only water but also the alkali in the processing composition. Dr. Land's insight lay in the recognition that the problem has to do not solely with the reaction of the supports to that environment but also to each other. The film unit will remain flat if the supports are symmetrical in the sense that both have low water transmission and absorption rates. It had theretofore been thought that to maintain image stability one of the supports had to be water permeable so that the film unit could dry fairly rapidly. Contrary to that prevailing wisdom, Dr. Land believed that with the presence of the polymeric acid layer in the film unit a wet environment would not harm the image (*see* Part II, the '821 patent, *supra*). Accordingly, the combined use of the polymeric acid layer and symmetrical supports would result in a film unit that was both stable and flat. That Dr. Land's hypothesis is correct has been proven by countless film units produced with both features. Thus, I find that the '540 patent discloses substantially more than the choice of a known material. The question remains whether the concept of symmetry as articulated in this patent was taught in the prior art.

The parties agree that a person of ordinary skill in the art to which the '540 patent pertains would have had at least an undergraduate degree in chemistry or chemical engineering and several years experience in the fields of plastics and

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[25] Of course, a conventional photograph is one sheet that has been dried rapidly, and finding a means of balancing the stresses is not inordinately difficult.

film. Each party disparages the qualifications of the opposing expert. I find both not only qualified, but highly qualified.

The references cited against the patent in suit fall into several categories. First, are the patents pertaining to peel-apart film units. Kodak's '915 patent and Polaroid's '775 patent describe a color instant film with a layer structure similar to that of '540. The former includes polyester in a comprehensive list of possible support materials. The latter suggests polyester as the material for both support layers. However, because both disclose only peel-apart film units, neither addresses the particular problems of curl in the closed system of an integral unit. Neither teaches the concept of symmetry.

The second category includes U. S. Patent No. 2,563,342 and U. S. Patent No. 2,983,606, both of which do describe integral embodiments. The '342 patent is directed to black and white film. One of the objects of the patent is to obtain greater resistance to curling, and it attempts to do so by the use of two support layers made of the same material, cellulose acetate. Polyester was not, at the time of this patent, available. In any event, despite the depiction in '342 of a film unit with identical supports, the patent does not teach the feasibility of using symmetrical water-impermeable supports which by definition will maintain a wet environment for a period of time. Indeed, both Polaroid and Kodak found the use of cellulose acetate for both supports to be impracticable.

The '606 patent discloses a film unit with a structure like that of '540. Although directed primarily to peel-apart film, it does contain a description of an integral format that has two supports. It mentions cellulose acetate for the negative support, baryta paper for the positive support, and poly-

ester not at all. The patent admittedly teaches nothing about choosing materials for those supports. It certainly does not teach the use of water-impermeable symmetrical supports, and I do not find the concept of symmetry to have been obvious even to a person of the high skill necessary in this field.

Finally, Kodak points to its own BIMAT process as evidence that the invention of the '540 patent is old and that symmetry in support is obvious. BIMAT was used for aerial and satellite reconnaissance photographs. It consists of a large roll of 4 mil Estar, the Kodak tradename for polyester film base, on which was coated a gelatin layer containing a processing agent. The user soaked the gelatin in a prescribed solution and brought this sheet into contact with a sheet containing the exposed negative. The latter was also carried on a large roll and was exposed frame-by-frame. When the two sheets are brought together the exposed negative is developed and a diffusion transfer image formed on the Estar sheet. After development, the negative is stripped away. Because the image layer on the Estar sheet was wet and sticky, it could be, and often was, covered with a second transparent polyester support to permit handling of the film. The BIMAT process thus provides transparencies, not reflection prints. These transparencies were stored on a spool or reel and could be viewed on a light table. Particular frames could then be cut out and processed again to make photographic prints.

Mr. John Otto, now a marketing product coordinator with Kodak, and formerly a photographic technician, brought to court samples of BIMAT processed aerial film that, he testified, had been made in 1966. They were flat and they were made of two sheets of polyester. However, the similarity with the disclosure of '540 ends there.

Kodak never regarded BIMAT as a permanently closed system. The laminate is made of two long strips of film, not discrete film units; and Kodak experienced difficulties making the cover sheet adhere to the BIMAT film. The informational brochure for this product states that an image will last about a week to ten days and it recommends that if long storage is desired, the film should be washed and dried.[26] It differs from an integral film unit in that the BIMAT sandwich is filled only with hardened gelatin, the transferred silver halide and a residue of processing material, compared with the multiplicity of layers and the retained moisture in an integral film unit. Given these fundamental differences in process, function and resultant product —and despite the facts that it uses two polyester supports and that some flat samples exist—I find that BIMAT does not anticipate the '540 patent, nor teach its invention.

The inventiveness of the patent is further underscored by Kodak's unsuccessful efforts to achieve a flat and stable film unit. Kodak's efforts, begun in 1969, focussed initially on systems that had at least one water permeable support, because it then adhered to the prevailing wisdom that rapid drying was essential to image stability. For the most part it used Estar for the image layer support and tested with it more than 600 different support materials. After the introduction of SX-70 Kodak began to use two polyester supports.

The PR-10 film unit differs from the literal language of the claims in two respects. It uses pelloid layers on the outside of both supports. In addition, the two supports are of different thickness—4 mil for one, 6 mil for the other—

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[26] The samples brought by Mr. Otto prove Kodak's cautionary instructions. They are faded and stained.

and are therefore of different stiffness as well. Kodak also claims departures in the PR-10 from the description of the laminae and the diffusion path of the '540 patent.

I am not persuaded by the evidence that the addition of the pelloid layers corrects any tendency to curl. On the contrary, the evidence suggests that a PR-10 film unit without pelloid is no more prone to curl than one with the pelloid layers intact.

That the supports of PR-10 are of different thickness and stiffness is undisputed. Kodak argues from this fact that the supports therefore do not have the same physical response to moisture as required by the claims. I credit the testimony of Dr. Land, however, that the important characteristic is the low permeability to water of the inside surface of the support. That is what determines the physical response of the support layer as a whole to moisture. That being so, the difference in thickness does not avoid infringement of all claims asserted.

Finally, Kodak argues that because the transfer image of PR-10 is not formed by diffusion of the dye image-providing materials through the layer formed by the processing composition, it is not formed by diffusion "through [the] intermediate lamina," and PR-10 does not infringe the asserted claims. The argument is premised on a reading of claims 1 and 7 that would limit the intermediate lamina to a layer formed by the processing fluid. I credit Dr. Land's testimony that the intermediate lamina of these claims are not so limited.

In summary, claims 5, 6 and 8 of U.S. Patent No. 3,578,540 are valid and infringed.

## VII. *U.S. Patents Nos. 3,709,122 and 3,753,392*

### *Background*

Every camera must incorporate a mechanism for advancing film into position to be exposed and after exposure away from the shutter opening and usually onto a roll for storage. Instant photography employs not rolled film but separate thin, flexible film units which are stacked in a cassette, typically in exposure position and which must be moved one at a time. Moreover, in an instant system, the film unit must, after exposure, move into the spread rollers to break the pod and distribute the processing composition contained in it over the entire photographic portion of the film unit. Thus, in a camera for instant photography, the film-advancing system must not only move the stacked film unit, it must do so one at a time and it must drive the spread rollers at an even and proper speed for a period long enough to both spread the processing composition and fully eject the film unit out of the camera.

During the development of the SX-70 Polaroid engineers and an outside consultant designed many different film-advancing systems. The principal variables were the location and shape of the motor and the configuration and mechanics of the pick, the device to move the film unit. All of the early designs placed the motor in or near the rollers, that is, in front of the cassette and camera, and they used friction devices or continuously reciprocating front picks. In the fall of 1969, after a number of pre-production models of cameras had been built, it became apparent that substantial problems remained with the pick in its various manifestations. Even in the then latest model, the PT III, the pick was unreliable in that it sometimes failed to transport even one film unit while at other times it transported

more than one. The problem was sufficiently serious that Robert Duncan, the project manager of the SX-70 program, feared that Polaroid would not be able to meet the projected introduction date for the SX-70 camera and film. Dr. Land and others then engaged in an intensive effort to find a solution. As a result, Dr. Land and Messrs. Blinow and Leduc, a Polaroid engineer and his assistant, developed a transport system which gave rise to two patents, for the rear pick and for the rear motor and gear train. The pick, which had been incorporated into earlier commercial cameras and the several experimental models before the fall of 1969, included, as mentioned earlier, both friction devices such as rubber fingers or wheels that pinched on the surface of the film unit, and front picks that entered holes in the film unit and pulled it into the spread rollers. Because the film units were thin and flexible, it had earlier been thought that they had to be pulled rather than pushed out of the cassette.

The friction devices were in practice unreliable. They did not always move the film unit at uniform speed; the pressure of the device could mechanically alter the silver halide grains and it could push the film unit out of alignment with the exit slot; the rubber tended to harden with age or become contaminated and was then unable to engage the film unit constantly and steadily. The front pick also presented several additional difficulties. The perforations required in the film unit for the operation of the front pick jeopardized the moisture integrity of the pods, they added to the cost of production, and they marred the appearance of the finished picture. In addition, a hole had to be built into the cassette containing the film unit to permit access of the pick to the film unit. Because that hole was near the exit slot it jeopardized the light tightness of the system.

These combined disadvantages defined the problem that required solution—to move film reliably and one at a time, without disturbing the alignment of the remaining film units relative to the exit slot, without requiring holes in the film unit and without fogging the unexposed film units. Dr. Land proposed that a single pick enter a slot in the cassette at the end opposite the spread rollers, engage the film unit at the rear, and from there push it into the spread rollers. This solution eliminated the need for holes in the film unit, it avoided any possibility of fogging, and it proved to be extremely reliable.

Dr. Land's rear pick was incorporated into the next two experimental models, the U-2 and U-3 built in early 1970. In these models the motor was located in the front of the cassette near the spread rollers and the new pick was variously connected to the motor or crank by a bar or a strap. Consideration had also been given to connecting it by a chain, a cable or a belt. It was then that Dr. Land assigned Messrs. Blinow and Leduc the responsibility of designing a drive system for the next model, the U-4. They proposed locating the motor in the rear of the camera and connecting it to the spread rollers by means of an enlongated gear train. They also worked out a mechanism for stopping the movement of the pick while the film unit travelled through the spread rollers, until the time came for the pick to return to its position at the rear of the camera. The first camera to incorporate both improvements was the U-42 which was completed in August 1970. It became the commercial SX-70.

The rear pick has proven to be very successful and completely reliable. Dr. Land testified, without contradiction, that this pick design has moved billions of pictures and

he has never heard of or seen a failure. It is disclosed in U.S. Patent No. 3,753,392, issued to Dr. Land on August 21, 1973, on an application filed on August 12, 1971, which was a continuation-in-part of an application filed August 19, 1970. The drive system with rear motor, elongated gear train and pick disenabling mechanism is the basis of U.S. Patent No. 3,709,122. The application for this patent was filed on May 10, 1971. The patent issued January 9, 1973. Polaroid alleges infringement of both, and I will consider them in reverse order.

*The '122 Patent*

According to the specifications, the invention relates to "a film-advancing means for use with e.g. self-developing cameras of the single lens reflex type, and more particularly, to a marriage between the film-advancing means . . . and other subsystems of the camera to provide a structure which is slim, compact and readily lends itself to transport within a user's pocket." More precisely, the specifications describe an arrangement that includes a motor at the rear of the camera, near one end of the film cassette, a film transport means in the form of a pair of rolls at the opposite end and a gear train, i.e., a plurality of gears coupling the motor and rolls which extend along one side of the film cassette.

Mounted on one gear of the gear train is a pin which engages and moves the pick mechanism and therefore the film unit. Because the gear carrying the pin moves through more than one revolution for each exposure, to prevent the pick from continuously moving back and forth a latch is provided on the pick apparatus that cooperates with a cam on the gear train to stop the pick "near the end of its travel toward the rolls, for a predetermined period of time, e.g., a period of time at least as long as that necessary to

move the film unit out of engagement with the rolls." In operation, the gear train reduces the high speed of the motor to three different, slower speeds as needed to drive, respectively, the pick, the rolls and the cam.

Translated and somewhat simplified, the motor and connected gear train are activated by pushing the shutter release button on the camera. Insofar as is relevant to this patent, as the gears revolve, the pin engages the pick apparatus and drives it forward so that one film unit is delivered to the rolls.[27] Although the gears continue moving to drive the rolls, the latch and cam are arranged so that the pick is held in place from the time the film unit enters the rolls until it exits. At that point in time the cam releases the latch and the pick returns to its rear position, ready to start the next cycle, and the motor stops.

Polaroid asserts infringement by Kodak's EK-6 camera of claims 1, 2, 3, 6 and 8 of the '122 patent.

Claim 1 describes the arrangement and operation of the drive system components: "motor means" mounted adjacent one end of the structure supporting the cassette (the rear motor); "transport means" mounted at the opposite end of the cassette structure for engaging and moving a film unit (the spread rollers); and "motion-transmitting means" coupled to the motor means and extending along one side of the cassette structure (the gear train). The claim also calls for "means extending from said motor means (the pin) for engaging and driving film-advancing means" (the pick) from a "first position" to a "second position" "to advance an exposed film unit . . . " into the spread rollers.

Claims 2, 6 and 8 depend on claim 1, and claim 3 depends on claim 2. They add the simultaneous operation of the

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[27] The precise manner in which the pick engages the film unit is described in the following discussion concerning that patent.

pick and rollers (claim 2), the disenabling of the pick "for a predetermined period of time" (claim 3), a gear train consisting of a plurality of gears (claim 6), and a flange to drive the pick from the gear train (claim 8).

As is true with respect to all of the other patents in suit, Kodak contends that the claims in this one are invalid. The invalidity defense is based on 35 U.S.C. § 102(e), (f) and (g) and § 103. Kodak also denies infringement.

The parties have divided the prior art alleged to be pertinent into four categories, a group of rear motor camera patents, two groups of front motor camera patents, a number of Polaroid camera models, and a number of commercial cameras.

The rear motor camera patents, U.S. Patent No. 3,714,879 to Land, Blinow and Eloranta; U.S. Patent No. 3,641,889 to Eloranta; U.S. Patent No. 3,688,667 to Paglia; and U.S. Patent No. 3,685,416 to Coughlin, are asserted to be references under both sections 102(e) and 103. All have application filing dates between September 2, 1970 and April 16, 1971, which are earlier than the filing date of the '122 patent. All of these patents disclose a motor located at the rear of the camera and spread rollers at the front. All disclose a "motion transmitting means" connecting the motor and rollers, which, at least, in the case of the '879 patent, is a gear train substantially identical to that of '122. All lack disclosure of the pick drive and disenabling mechanism of claim 1, however, even according to the testimony of Edward Kaprelian, Kodak's expert. None, therefore, meets the strict requirements of anticipation.

Polaroid also questions whether the rear motor patents may even be considered prior art. Since they bear earlier filing dates than does the '122 patent, Polaroid has the burden of proving that the invention of the '122 patent was both conceived and reduced to practice before September

2, 1970, the date the '889 application was filed. *Hazeltine Research* v. *Brenner,* 382 U.S. 252, 255-56 (1965); *Radio Corp. of America* v. *International Standard Electric Corp.,* 232 F.2d 726 (3d Cir. 1956). Reduction to practice occurs when the invention is incorporated into a working device. *Boyce* v. *Anderson,* 451 F.2d 818, 820 (9th Cir. 1971); *Automatic Weighing Machine Co.* v. *Pneumatic Scale Corp.* 16 F. 288, 303 (1st Cir. 1909). I find that Messrs. Blinow and Leduc thought of locating the motor in the rear in late March 1970; and during April, May and June they worked out and tested the disenabling mechanism and the details of the gear train. Moreover, the evidence is undisputed that at least one of the working camera models, the first U-4 model, produced in August 1970, incorporated the rear motor drive system with pick disenabling mechanism. Accordingly, the rear motor patents are not prior art and do not invalidate any of the claims of the '122 patent under 35 U.S.C. § 102(e).

Kodak next relies on a number of front motor cameras, all of which are acknowledged prior art: U.S. Patent No. 3,683,770 to Land; U.S. Patent No. 3,447,437 to Tiffany; U.S. Patent No. 3,511,152 to Erlichman; U.S. Patent No. 3,545,357 to Erlichman; and U.S. Patent No. 3,563,145 to Bendoni. It asserts that all teach a pick disenabling mechanism and that the location of the motor in front is not essential to obtain a slim and compact configuration nor is it critical to the operation of the drive system. Neither the testimony of Mr. Kaprelian nor Exhibit DF-765, a chart comparing the elements of the claims of the '122 patent with the disclosures of the asserted prior art references, persuades me that the front motor camera patents anticipate the '122 invention. All claims of '122 are expressly limited to defined locations for the motor, spread

rollers and "motion transmitting means." At this most basic level, therefore, none of the front motor camera patents meet the location requirements of the asserted claims of '122. Moreover, the requirement of a disenabling mechanism is admittedly met only in part by Bendoni '145 and Erlichman '357; and I find it is met not at all by Erlichman '152.

Finally, Kodak contends that in light of the references cited above, as well as a number of commercial cameras in use before the '122 invention and certain camera models built at Polaroid in 1969 and 1970, the '122 patent is invalid as obvious. The parties agree that the defense of obviousness is less strict than that of anticipation. *Shanklin Corp.* v. *Springfield Photo Mount Co.*, 521 F.2d 609, 617 (1st Cir. 1975), *cert. denied*, 424 U.S. 914 (1976). They do not agree about the scope and content of the prior art.

The art to which the '122 patent pertains is the art of camera design in general, not merely the art of designing instant cameras. The level of skill in that field is high; to be deemed skilled a person would have to have an engineering degree and at least four years of experience in camera design.

The separate elements of the claims of '122 are unquestionably taught by the prior art. The concept of a gear train, an arrangement that consists of a driving gear, a driven gear, and at least one intermediate gear, was well known in 1969-70, as was the fact that the gears could be combined in "an endless variety of ways in order to meet particular requirements of shaft position, directions of rotation and gear ratio." H. Merritt, *Gears*, (3d ed. 1954). Moreover, gear trains were used in cameras, as demonstrated by the Bell & Howell Autoload 342 and the Yashica Sequelle cameras; and they were incorporated into several of the prior art patents. Both U.S. Patent No. 3,683,770

to Land and Bellows and U.S. Patent No. 3,447,437 to Tiffany show extended gear trains that connect the motor and rollers. The latter patent also teaches the use of speed-reducing gears.

The idea of a mechanism to move each film unit with but one back and forth motion by the film-advancing device was also old. Two front motor camera patents, U.S. Patent Nos. 3,702,580 and 3,678,830, both to Erlichman, teach the use of single stroke film picks. The Erlichman '152 patent describes means of disenabling the pick by the movement of the film against a ramp. Again in the Bendoni '145 patent, the movement of the unit film activates a disengaging mechanism that locks the pick in resting position until the next cycle. Even the idea of disenabling the pick by disengaging it from the continuously moving gears was known. The Erlichman '357 patent describes such a variant whereby the film unit, upon reaching a lever, unhooks the pick gear from the gear train until the processed film is removed from the camera.

The rear motor camera patents, although not prior art, are nevertheless relevant on the issue of obviousness. The proximity of the application filing dates of these patents to that of the patent in suit permits the inference, which I draw, that the work underlying those patents was done at about the same time as was the work on the '122 patent. These patents thereby indicate the level of skill in the art at the time and they suggest that there is nothing unobvious about locating the motor in the rear and using a gear train to connect motor and rollers.[28]

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[28] Kodak would include in the prior art also the secret internal camera models, particularly the PT-III and U-3. While they, like the rear motor camera patents, may be evidence of the level of skill in the art, they are not prior art. *Del Mar Engineering Lab.* v. *United States,* 524 F.2d 1178, 1182 (Ct. Cl. 1975).

Polaroid's principal witness, Dr. Milton S. Dietz, testified that the advance of the '122 lay in the structure described and its particular arrangement. The patent itself states that it relates to a "marriage" between the pick and other subsystems that results in a camera that is slim and compact. The essence of the arrangement is the location of the motor in the rear. Once the motor is placed in the rear, the location of the remaining subsystems is dictated by the functional demands of the camera. Polaroid argues that so locating the motor was novel because it contradicted a number of known engineering principles and preconceptions, e.g., a motor should be near the primary load to be driven; and a transport system should be as short as possible to minimize the number of moving parts because a long gear train will bring about a loss of efficiency. However radical a departure from earlier instant cameras the rear motor may have represented, it was nevertheless taught by the Bell & Howell Autoload 342 and the Cannon Dial 35 cameras, which teaching had proven the engineering principles to be less than inviolate. Even considering the arrangement as a whole, I find that it was, in view of the prior art, obvious.

The arrangement of the components of the drive system do not necessarily describe the different timing functions implicit in the claims of '122. But the timing too is taught by the prior art. As noted earlier, the gear train of Tiffany '437 describes the use of speed-reducing gears. I also credit the testimony of Mr. Kaprelian that the use of compound gears to achieve speed reduction and torque magnification was well known in 1969.

No one item of cited prior art discloses each and every element of the '122 patent, but I find that when taken altogether, the commercial cameras and the front motor camera

patents would lead one skilled in the art to the invention of '122. Claims 1, 2, 6 and 8 of the '122 patent are therefore invalid under 35 U.S.C. § 103.

I consider the issue of infringement for the reasons stated earlier and find that, if the patent is valid, all claims asserted against Kodak are infringed. Kodak argues that it does not infringe any claims because the motor and a number of the gears of the EK-6 camera are above the film plane and that therefore they are not in the particular positions specified in the patent. But the claims do not specify the position of motor and gear train in terms of planarity vis-a-vis the film cassette. Nor do the claims call for a "slim and compact" camera as Kodak asserts.[29] The EK-6 camera is equipped with a motor located at one end of the camera, spread rollers at the opposite end, and a gear train connecting the two which runs alongside the cassette. Extending from one of the gears in the gear train is a cam that drives the pick. In operation, the system works as described in claim 1. The pick moves from one specific position to another—from a first position to a second and ultimately back to the first. The gear train of EK-6 provides simultaneous operation of pick and spread rollers and thus infringes claim 2.

The system includes a mechanism, a single revolution clutch, that disenables the pick for a predetermined period of time necessary for the film unit to move through the spread rollers. That mechanism infringes claim 3.

Claim 6 is infringed by the gear train which extends from motor to spread rollers. The flange on the EK-6 pick

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[29] Insofar as the specifications describe the invention as providing a slim and compact camera, they are correct. Even if the location of the motor in the rear may have extended the length of the camera, it is slim and compact by virtue of the arrangement of the component parts. But that feature is not claimed.

mechanism which is driven by the cam on the gear train infringes claim 8.

In summary, I find that the '122 patent is not invalid under 35 U.S.C. § 102, but that its invention was obvious in view of the prior art and that the asserted claims are therefore invalid under § 103. If the patent were valid, all of those claims would be infringed by Kodak's EK-6 camera.

*The '392 Patent*

After outlining the problems of the then-known transport systems—the friction devices and front picks—the specifications describe a film-advancing apparatus for use with a cassette that is the subject of yet another patent, U. S. Patent No. 3,415,644. The cassette has an exposure aperture in the forward wall, a slot in the front end through which the film unit exits into the spread rollers and "at least one elongated slot which extends rearwardly along one lateral side of the forward wall and at least part way down the cassette's trailing end wall." The film-advancing apparatus is mounted within the camera and includes "a film-engaging member which is adapted to extend into the slot in the cassette's forward and trailing end walls and engage the foremost film unit at or near its trailing end or at its trailing edge . . ." in order to move it out of the cassette and into the bite of the rollers. The specifications discuss the invention in terms of a transport and processing system. Because this rear pick necessarily functions as part of such a system, it must be considered in the context of the entire system even though other aspects of the system are variously disclosed in several other patents, including '122 and '644.

Polaroid accuses the Kodak EK-6 camera of infringing claims 1, 2, 3, 4 and 12.

Kodak asserts invalidity under 35 U.S.C. § 103; it alleges that the patent is unenforceable; and it denies infringement.

Claim 1 calls for a combination of cassette and camera. The cassette contains a plurality of thin flexible film units and has an exposure aperture, an exit slot, and a rear pick opening "near an opposite end of said cassette." The camera has a "first film-advancing means adapted to extend into said opening for engaging [the] foremost film unit at [the] second edge thereof . . ." (the rear pick, which is shaped like a hook),[30] a "second film-advancing means" (the spread rollers), a motor, and a means for coupling the motor to the pick and rollers for advancing the film unit out of the cassette into the rollers and ultimately out of the camera. Claims 2 and 3 depend on claim 1 and add, respectively, simultaneous motion of the pick and rollers and reciprocating movement of the pick. Claim 4 depends on claim 2 and adds to it reciprocating movement of the pick. Claim 12 describes the method of exposing and processing a succession of film units by using the cassette, film units, and camera of claim 1.

The relevant art to which the '392 patent pertains is camera design. The prior art cited again falls into several discrete categories: a number of patents disclosing front picking mechanisms;[31] a number disclosing rear picking mechanisms;[32] and a number of commercial cameras.

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[30] The specifications describe it as "a resilient arm . . . [that] includes a downwardly turned film-engaging member which is adapted to engage the trailing edge of the film unit. . . . [This] member is configured such that its free and does not extend to a position wherein it could engage the trailing edge of more than one film unit."

[31] U.S. Patent No. 3,511,152 to Erlichman; U.S. Patent No. 3,545,357 to Erlichman; U.S. Patent No. 3,447,437 to Tiffany.

[32] U.S. Patent No. 3,505,943 to Bellows, U.S. Patent No. 1,070,400 to Brieloff, U.S. Patent No. 1,626,606 to Fish, U.S. Patent No. 3,460,452 to Land, and U.S. Patent No. 3,537,370 to Wareham, and a number of I.B.M. patents.

Two of the front pick patents, Erlichman 3,511,152 and Bellows 3,505,943, were cited by the Examiner in rejecting the application as initially filed. That application claimed that the pick engaged the film unit "at or near its trailing end." The Examiner thought it obvious, in view of the Bellows '943 rear pick patent, to move either the friction wheels of Tiffany '437 or the front pick of '152 to the rear. In view of the '437 motor driven film advance system, the Examiner also thought it obvious to motorize the rear pick of Bellows '943. Polaroid thereafter amended the claims of the patent in suit to a rear pick that engaged the film unit not "at or near the trailing end," but only at the trailing "edge." In view of that history, I must read the patent narrowly and the claims as so limited. *Graham* v. *John Deere Co.*, 383 U.S. 1, 32-34 (1966); *Burland* v. *Trippe Mfg. Co.*, 543 F.2d 588, 591-2 (7th Cir. 1976); *Itek Corporation* v. *Information International, Inc.*, 476 F. Supp. 1043, 1047 (D. Mass. 1979).

The limitation as to the point and manner of the '392 pick's engagement of the film unit renders the teaching of the front pick patents inapposite. Front picks operate either on the surface of the film unit or by entering holes in the film unit. All operate on the principle that the film unit has to be pulled out of the cassette. That a pick can push the film unit and that it can do so while fully maintaining the latter's physical integrity is not taught, nor even suggested by any of the front pick patents, either singly or in combination. Indeed, Mr. Kaprelian agreed that engineers of ordinary skill would first look to the use of holes in the film for engaging and moving it.

The prior art also includes a number of patents with picking mechanisms in the rear position. Although Kodak in its brief characterizes every such mechanism as a "re-

ciprocating rear pick," the cited patents in fact disclose a great variety of devices, most of which are not picks as that term is used in the '392 patent. Bellows '943 was one of the patents cited by the Examiner in rejecting the original application. It discloses a manually operated friction finger that pushes against the film unit near its trailing end. Like the wheels of Tiffany '437, the finger of Bellows acts on the surface of the film unit with all the disadvantages of that arrangement. Insofar as the Bellows finger enters the cassette through the exposure aperture, its potential for causing harm to the photosensitive area of the film is even greater than that of front pick devices. The Bellows rubber piece does not teach the '392 hook-like pick that pushes the film unit from the rear edge.

The '452 and '370 patents to Land and Wareham, respectively, disclose scanning cameras that are similar in operation. They were in fact never built because the design was too complex to be practical. The film transport system of these cameras is moreover totally different in function and design from that disclosed in the patent in suit. The film is moved out of the pack through rollers into exposure position by means of a lever which is mounted in the pack and is not part of the camera. After exposure, the direction of the rollers is reversed, the pod is then broken, and the processing composition is spread on the return trip. The lever is manually operated, and it does not push the film into the rollers for spreading purposes. These patents do not use nor do they teach the rear pick.

Brieloff '400 and Fish '606 describe cameras of the type once used by street vendors. Both cameras take photographs on postal cards. The Brieloff camera contains a magazine loaded with a number of photosensitive postcards. After exposure, a card is advanced through two pairs of friction

wheels, one on each side, into a developing tank. The system's resemblance to '392 stops at this point, however. The film-advancing system is manually operated by a crank. The card travels toward the tank along with a front plate which is an integral part of the camera. The card is held against the plate by friction. The plate, in addition, has a shoulder across the entire trailing or top edge which also holds and moves the card as the plate moves. The Brieloff camera would not work with an instant film unit: it could not advance the film into spread rollers, nor could the processing system of the Brieloff camera perform the composition-spreading function. Brieloff does not include a separate cassette with an opening for the pick, and the shoulder across the moving plate does not suggest a separate pick that enters the magazine and moves only a film unit.

Kodak points out that Polaroid did concede the pertinence to the '392 pick of the Brieloff '400 camera when it in 1975 formally disclaimed claims 5-10, which arguably "were not patentable over Brieloff" because they did not include spreading. But the disclaimer of one claim does not admit the invalidity of other claims. 35 U.S.C. § 253, *Champion Spark Plug Co.* v. *Gyromat Corp.*, 603 F.2d 361, 364 (2d Cir. 1979), *cert. denied*, 445 U.S. 916 (1980); *United Chromium* v. *International Silver Co.*, 60 F.2d 913, 914-5 (2d Cir. 1932), *cert. denied*, 288 U.S. 600 (1933). Moreover, the differences between the Brieloff '400 and the remaining claims of the '392 patent are, as noted, significant.

The Fish '606 camera is somewhat more suggestive of the '392 invention than is Brieloff. It, too, uses a stack of photosensitive postcards. However, instead of a moving plate with shoulder, the Fish camera employs two manually operated lugs or tongues that press against the top edge of the

exposed card and move it out of the card holder into the developing tank. Although they, like the Brieloff '400 shoulder and the '392 rear pick, operate against the edge of the film card, I find that the '606 Fish patent does not teach the invention of '392. A postcard is not a thin, flexible film unit, and the disclosure of a mechanism to push a card does not teach the possibility of pushing a flexible unit. I credit the testimony of Dr. Land that the arrangement of the tongues would operate to scratch the photosensitive surface of the next postcard to be exposed—a significant problem, given that the tongues move along the entire length of the underlying card. The parallel tongues also do not teach the feasibility of a single pick. Like the Brieloff camera, the Fish camera contains no spread rollers, and it cannot perform their functions. The postcard holder of Fish is also, like that of Brieloff, wholly unsuited to receiving the rear pick of '392.

Finally, Kodak cites three I.B.M. patents in what it calls the "analogous" art of card feeding. These patents relate to large, stationary data handling machines. The card feeders use a pair of rapidly reciprocating knives to drive a succession of I.B.M. cards from the bottom of a stack of cards fed by gravity. The technology of moving these cards is not the same as that of moving a film unit. The evidence showed that the I.B.M. devices depend on the inertia of the stack and the high speed of the knives to advance one card at a time. That being so, they are not adaptable to operation at the far slower rate required to move film, and they, therefore, do not teach a camera designer how to advance film. They are not relevant prior art.

Kodak next cites a number of commercial cameras. Each of them, Kodak asserts, has a rear pick which moves film in the camera by pushing it at a trailing edge. They in fact do

no such thing. All but one of these cameras, the Speed-O-Matic, use conventional roll film with sprocket holes. The film is advanced by a claw or claws that enter the holes along the edge or edges of the film and pull it into the next position. None uses stacked film units stored in cassettes. None moves one frame at a time.[33] None performs spreading and processing functions, and in none is the claw part of an intricate and integrated unit of camera, cassette and film.

The Speed-O-Matic uses a cardboard holder into which are placed back-to-back two pieces of film with their photosensitive side pointed outward. The holder is put into the camera so that a hole in the holder fits over a claw built into the camera. The claw moves the film into and out of the envelope. After the first exposure the envelope is removed from the camera and turned around to start the process anew. This arrangement, like that of the other cameras, does not perform the functions required of the '392 rear pick. It does not teach the invention of the '392 patent.

As noted earlier, the essence of the '392 invention is the rear pick—its placement and manner of engaging and advancing the film unit. The invention must, however, be viewed in the context of the entire film transport arrangement and the demands of an instant camera. So viewed, the invention is not obvious. The differences between the prior art and the invention are important: none of the prior art patents or cameras had to solve the practical problems of a camera that not only stores and exposes film, but also processes it. Even Kodak's expert, Mr. Kaprelian, called the SX-70, which incorporates the '392 invention, "most innovative."

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[33] As Dr. Land pointed out, advancing one frame of a roll of film necessarily advances all other frames on the roll.

Kodak next argues that the patent is unenforceable because Polaroid failed to cite to the Examiner the most pertinent prior art, namely, the scanning camera patents, Land '452 and Wareham '370, and the street vendor camera patent, Brieloff '400. First, all of these patents were in the class of art searched by the Examiner and are, therefore, deemed to have been considered and discarded. *E.I. DuPont de Nemours* v. *Berkley & Co., Inc.*, 620 F.2d 1247, 1267 (8th Cir. 1980), *International Telephone & Telegraph* v. *Raychem Corp.*, 188 U.S.P.Q. 214, 219 (D. Mass. 1975), *aff'd*, 538 F.2d 453 (1st Cir.), *cert. denied*, 429 U.S. 886 (1976). Second, having considered the prior art, I find that these three patents are not, in fact, more pertinent than those expressly brought to the Examiner's attention.

Kodak denies infringement only of claims 3, 4 and 12. It seeks to avoid infringement of claims 3 and 4 by suggesting that the path of the EK-6 pick does not fit the requirement of "reciprocating movement." As to claim 12, it asserts that in the operating sequence of the EK-6 no "predetermined period of time" elapses "from termination of exposure" to the engagement of the film unit by the pick as called for by that claim.

The argument with respect to claims 3 and 4 depends on an interpretation of "reciprocating movement" to mean "back and forth in a straight path." Because the path of the EK-6 pick is more or less "D" shaped, it is said not to reciprocate. Kodak does not cite any authority for the proposition that reciprocating movement means only back and forth movement, and I do not read the words of the patent to confine the pick to a straight path. Accordingly, I find those claims infringed.

With the EK-6 the photographer must not only depress but also release the shutter button to start the motor and

the consequent film advance. Because the photographer might theoretically keep the button depressed indefinitely, Kodak asserts that the element in claim 12 of "a predetermined period of time since termination of exposure" is missing and that the claim is therefore not infringed. Polaroid argues that the predetermined period of time means a time long enough to prevent blurring of the image by advancement before exposure is complete and that Kodak cameras undoubtedly have a similar safeguard built in. The difficulty with Polaroid's argument is that claim 12 does not further define the period of time and no evidence was offered as to any such safe time in the EK-6. Accordingly, I find claim 12 not infringed.

For the reasons stated, I find that the asserted claims of the '392 patent are valid and that the EK-6 camera infringes claims 1, 2, 3 and 4. Claim 12 is not infringed.

VIII. *U.S. Patent No. 3,810,211*

During the development work of the SX-70 system one of the problems that emerged and required solution was the phenomenon known as light-piping. The archetypical integral film unit has at least one transparent support through which the film is exposed. In such a film unit the photosensitive layers are shielded from light during development, on one side by an opaque support or by preformed opaque layers, and on the other by the inclusion in the processing composition of an opacifying substance. This substance is spread across the photosensitive surface of the film unit as the film travels through the spread rollers. When the film unit emerges from the camera, light rays hitting the transparent support are able to travel, or "pipe," through the length of that support and past the spread rollers to the portions of the film not yet treated with processing composi-

tion and therefore not yet shielded from light by the opacifying substance contained therein. Such light rays cause fogging, i.e., further exposure, where they strike the untreated portion of the film unit.

One well-known solution to the problem of light-piping was to incorporate into the support an opacifying pigment in a quantity sufficient to offer some resistance to the light rays traveling through it. Another solution considered by Polaroid researchers, including Mr. Wareham, one of the inventors of the patent in suit, was to shield the film unit from ambient light until all or nearly all of it had passed the spread rollers. As possible shielding mechanisms, they discussed a dark curtain, a black retractable shade, and some sort of shroud or "imbibing lip." In the fall of 1971, Messrs. Wareham and Paglia, another Polaroid engineer, proposed a structural addition to what became the SX-70 camera, namely, a triangular light-shielded chamber through which the film unit had to travel before exiting the camera. One side of the triangle was formed by the wall of the camera that included the spread rollers. The second side, perpendicular to the first, was formed by a hinged extension of the back housing of the camera. The third side, the hypotenuse of the triangle, extended from the outer end of the back housing extension to the housing for the lens-shutter assembly which is attached to the first side. The addition was so constructed that it did not add to the size of the camera; when the camera was collapsed, the light shield folded into it. It was of such a size, however, that the film when exiting the spread rollers hit the hypotenuse and then was deflected by it toward an exit door between the end of the back housing extension and the lower end of the hypotenuse.

The triangular, folding structure was a more elegant solution than the shroud or dark sheets earlier discussed,

but it required bending the film unit to provide a sufficiently long path within the light-protected environment to reduce light piping to tolerable levels. This bending was contrary to Polaroid's long-held belief that proper spreading of the processing composition could be achieved only if the film were maintained in one plane. Surprisingly, bending not only failed adversely to affect spreading, it improved it in one important respect.

Ideally, the pod of an integral film unit contains exactly enough processing liquid—no more and no less—fully to cover the photosensitive area at the correct thickness. Too little liquid means that the image will not be fully developed; too much is expensive, and it presents the problem of storing the excess. The ideal, however, is difficult to achieve in practice. The fluid does not maintain a straight front as it is pushed by the spread rollers; it takes the shape of a tongue. The center of the advancing fluid tends to move ahead of the edges in a shape similar to that assumed by even an initially square piece of dough when it is rolled. This phenomenon was also well known. Since it required additional processing composition to ensure complete coverage, considerable effort had been expended at both Polaroid and Kodak to achieve a flattening of the meniscus.[34] Researchers at both corporations worked with the design of the cassette and the camera, as well as the film. Unexpectedly, bending the film unit to accommodate to the light-shield structure turned out to assist materially in the spread control process.

U.S. Patent No. 3,810,211, which issued on May 7, 1974, on an application filed on April 24, 1972, discloses

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[34] Polaroid had established its Spread-Testing Laboratory at least as early as 1969; Kodak, its Spreading and Trapping Committee no later than in 1970.

both the light-piping and spread control solutions to be gained from the claimed light-shield structure.

The specifications describe and illustrate a compact collapsible camera specifically including an "opaque light-shielding platelike member." They further detail the path of the film unit within this structure; it moves straight out of the spread rollers until it reaches the light shield whence it is deflected downward, and parallel to the light shield, to the exit at the bottom of the camera. The dimensions of the structure are such that when the leading edge of the film unit emerges into ambient light, a second portion, already spread with developer fluid, is between the exit and the front of the spread rollers but protected from light by the shield. A third portion, which has not yet been processed, is still behind the spread rollers. When the entire film unit has passed the rollers, the trap end is caught by the specially designed exit slot to prevent the photograph from falling to the ground.

The patent teaches that deflection of the film increases its path within the light-protected structure and thereby alleviates the problem of light piping. It also teaches that, given the relative stiffness of the film unit, deflection in front of the spread rollers causes the portion behind the spread rollers to be pushed up against the roof of the cassette. The result of that upward push is a thinning of the layer of developer fluid and an improvement in the contour of the fluid meniscus. The patent refers to, and indeed illustrates, other spread control devices and notes that the light-shield deflector enhances their utility in squaring the mass of fluid. This effect may best be understood by regarding the portion of the film remaining to be spread as a container. Pushing it up against the roof of the cassette or against any spread control projections shortens the con-

tainer and thereby prevents the fluid from assuming an elongated shape.

Polaroid accuses Kodak's EK-4 and EK-6 cameras of infringing claims 8, 9 and 10 of the '211 patent. Claim 8 calls for a camera with a means for receiving, exposing, and processing a film unit described in the specifications as an integral film unit. It further calls for a "means for deflecting" the exposed film unit from the path it would normally follow out of the spread rollers (the light-shield deflector), and it specifies that as the film is progressively advanced there is a portion outside the camera which has been spread, a second portion, also spread, between the rollers and the exit, and a third portion, as yet untreated, behind the rollers. Claims 9 and 10 depend on claim 8. Claim 9 describes the light-shield housing as forming part of the camera back and defines the exit path of the film unit as substantially parallel to the housing member. Claim 10 calls for the camera exit to grip the film unit as it passes through.

Kodak denies infringement and asserts the invalidity of the claims on grounds of anticipation and obviousness. It also argues that the claims inadequately describe the invention and do not therefore satisfy the requirements of section 112.

Kodak's anticipation and obviousness arguments are based on a reading of the claims of '211 without any reference whatever to the specifications. Kodak is, of course, correct in its statement that an invention is limited to that which is claimed and that the specifications cannot be used to expand the patent monopoly, *United States* v. *Adams*, 383 U.S. 39, 49 (1966), but "it is fundamental that claims are to be construed in the light of the specifications and both are to be read with a view to ascertaining the inven-

tion"; *Burns* v. *Meyer,* 100 U.S. 671, 672 (1880); *Ziegler* v. *Phillips Petroleum Co.,* 483 F.2d 858, 868 (5th Cir. 1973), *cert. denied,* 414 U.S. 1079 (1973). The claims asserted here describe a structure of defined dimensions and characteristics, as well as the change worked by that structure on the normal path traveled by the film unit out of the rollers and camera. The specifications explain the effect of the changed path of travel. Without consideration of an invention's object and beneficial result, the novelty of most inventions would often be elusive. Accordingly, I consider the prior art not simply as it describes particular camera structures but also as those structures affect the film unit.

Kodak cites five prior art patents and Polaroid's experimental U-5 camera as disclosing all of the elements of the asserted claims or their equivalents.

U.S. Patent No. 3,405,619 to Land describes a self-developing scanning camera. It is in fact constructed in such a manner that the film unit exits the camera through a curved passage necessitated by the particular placement of the motor. Although in this camera the film unit may in the course of its travel be literally partly outside the camera, partly in the passage, and partly behind the spread rollers, the '619 patent does not anticipate the asserted claims of '211.[35] First, the curved passage is not intended to be a light-shielding mechanism, nor does the patent disclose that it functions as such. Second, although the film is bent through the curved passage, the patent teaches nothing about bending and how bending improves spreading.

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[35] It is even questionable whether the passage is equivalent to the light-shield chamber of claim 8 of the '211 patent. Mr. Kaprelian, Kodak's expert, characterized it as the "exit means" of claim 10. It cannot be both, chamber and exit means, and anticipate '211.

Finally, the '619 camera is designed for use with peel-apart film which, by definition, does not present the same light-piping problems as does integral film. This patent was, moreover, in the class of art searched by the examiner during the prosecution of the '211 patent. *E.I. DuPont de Nemours* v. *Berkley & Co., Inc.*, 620 F.2d 1247, 1267 (8th Cir. 1980); *International Telephone & Telegraph* v. *Raychem Corp.*, 188 U.S.P.Q. 214, 219, *aff'd*, 538 F.2d 453 (1st Cir.), *cert. denied*, 429 U.S. 836 (1976).

Kodak argues that claims 8-10 are also anticipated by U.S. Patent No. 3,350,991 to Murphy. This patent is directed to the design of the film exit for a camera that uses peel-apart film. Kodak concedes that nothing in '991 teaches deflection of the film unit. On the contrary, the camera of '991 is designed to permit withdrawal of the film in a straight line. Although like the '619 patent, this patent literally reads on some of the elements of the asserted claims, also like the '619 patent, it does not disclose the invention of '211. With respect to the '991 patent, Kodak also argues that the accused cameras are like that disclosed in '991 because in both the film exit is in line with the path normally followed by the film, and if the asserted claims can be said to read on the Kodak cameras they are invalid under '991. The difficulty with the argument is that the film exit of the accused cameras is not, in fact, in line with the film's normal path.

Three additional patents [36] are said to anticipate the claims asserted. All were before the Patent Office during the prosecution of '211. These patents disclose cameras adapted for use with integral film units. In each the spread

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[36] U.S. Patent No. 3,683,770 to Land, et al., U.S. Patent No. 3,447,437 to Tiffany, and U.S. Patent No. 3,545,357 to Erlichman, et al.

rollers are located a short distance from the exit slot and in each the exit slot includes flexible lips that serve as a light seal and are arranged to exert a gripping force on the film unit. However, in none of these cameras is there a "means for deflecting [the] exposed film unit from the path it would normally follow. . . ." These patents do not disclose all of the elements of claims 8-10. They say nothing about light piping or bending. On the contrary, they reflect the view of Polaroid until the discovery of the '211 patent that a film unit should not be bent. These patents do not anticipate the claims of '211.

In the course of the development of the SX-70 system, Polaroid built a number of camera models, including the U-5. The U-5 was at one point modified with an opaque deflector plate. Kodak asserts that this model shows every element of the claims asserted or their equivalent. The U-5, however, is not prior art, both because it was an internal experimental model, *Del Mar Engineering Laboratories* v. *United States*, 524 F.2d 1178, 1182 (Ct. Cl. 1975), and because the structure upon which Kodak relies was built after the filing date of the patent in suit.

In support of its assertion of invalidity under section 103, Kodak relies on the same prior art patents discussed above plus two additional patents, Whall U.S. Patent No. 3,650,-188 and Whall German Patent No. 2,009,384, and the prior knowledge of light-shielding within Polaroid.

The parties do not disagree that the relevant art is that of camera design and that a person of ordinary skill in the art is one holding at least a Bachelor's degree in mechanical engineering with a number of years experience in the field.

Unquestionably the prior art taught that one solution to the problem of light-piping is to provide a light free environment until the entire film unit is coated. Polaroid does not

dispute that several of its camera designers knew that and had, in fact, experimented with a variety of light-shielding mechanisms, as described earlier herein. Moreover, the structures of all the prior art patents cited by Kodak and discussed above [37] do teach the feasibility of positioning an exit slot at some distance from the spread rollers. Although none specifically addresses the problem of light-piping, and, indeed, none suggests the use of that intermediate space for light shielding purposes, I find that an experienced camera designer would be able to adapt those cameras to provide the requisite protection from ambient light. However, none of these patents teaches the addition of a light shield particularly designed to bend the film unit.[38] Nothing in the experimental work at Polaroid suggested the feasibility, much less the utility, of bending the film.

Several of the patents, '991, '770, '437 and '357, do disclose exit slots defined by flexible lips or a spring arrangement. The similarities between those devices and that described in claim 10 of the '211 patent are such that the gripping of claim 10 would clearly be obvious to a skilled camera designer. The addition of such gripping in claim 10 to the camera of claim 8 is accordingly invalid.

The additional patents cited to support the argument that the '211 is obvious, U.S. Patent No. 3,650,188 to Whall and its German counterpart, 2,009,384, disclose designs for a detachable imbibition chamber, a light-tight container which holds the instant film while it develops. As shown in the patents, the imbibition chamber may be a

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[37] The '619, '991, '770, '437 and '357 patents.

[38] Even the Land '619 patent with its curved passage designed "to prevent rays of light from directly traveling in [the] path of the film assembly . . ." certainly does not teach bending for control of spread shape, nor even of light-piping in integral film units.

triangular structure into which the film is fed directly from the spread rollers. This is another patent that clearly teaches the use of a light-free environment; but since the film is fully developed before it exits the camera, the patent says nothing specifically to the problem of light piping. Moreover, in view of the size and conformation of the structure, the film is not bent at any time in its progress into or out of the chamber. Nor does the patent teach anything about spread control. The German patent discloses an alternative chamber with a transparent wall but only for storage purposes. As such, it does not render obvious '211.

Finally, Kodak argues that a thinning of the developer layer thickness is the only effect of deflection on spreading disclosed by '211. That consequence of bending was, according to Kodak, well known in view of Land U.S. Patent No. 2,495,111, Hamilton U.S. Patent No. 3,165,040, and Wills U.S. Patent No. 3,249,036. The first of these, the '111 patent, describes several mechanisms besides spread rollers for breaking pods. At least two involve a tortuous passage, something akin to a slalom course. As the film unit is pulled through the passage or the rods that form the slalom course, the pod is broken and the developer fluid spread. Although the patent describes a means of spreading by bending the film unit back and forth through obstacles, it says nothing about the effect of such bending on the shape of the meniscus or on the thickness of the developer layer. The '040 and '036 patents have to do with the design of film exit doors for peel-apart film and are used in Polaroid's Model 100 camera. Both teach that the film should be pulled out straight to avoid an adverse effect on spreading, and the exits are designed to ensure straight pulling. I am not persuaded that '211 is obvious in light of these additional references and conclude that the requisite invention is present in this patent.

Kodak attacks the validity of '211 on two additional grounds. The '211 specifications discuss the effect of bending the film unit on both the thickness of the developer layer and the shape of the meniscus. They also discuss the utility of bending in conjunction with other spread control devices. The evidence supports Kodak's contention that Polaroid knew that bending tended to thin the developer layer. The evidence does not, however, support Kodak's conclusion therefrom that Polaroid knew that thinning the developer layer improved spread shape. Nor does it support Kodak's assertion that spread shape is improved not by bending but by the inclusion in the film cassette of "shapers." As described earlier, the result of deflecting the film is to change the shape of the film as container and thus to prevent formation of the tongue. The prescription of bending to achieve a squared fluid mass went against all known principles. That bending will also affect development layer thickness and that it may be used in conjunction with other methods does not undercut the invention.

One of the drawings of the patent indicates an angle between the camera back housing extension and the light shield of 38°/30'. The claims do not define the angle. Kodak argues that that lack of specificity in the claims renders them invalid under section 12 because the angle is critical. The evidence showed, however, that the beneficial effects of bending may be achieved at angles other than that shown in the drawing. In fact, Kodak's 15° angle so proves. Accordingly, the claims do not fail to disclose an element that is critical within the meaning of the patent law. *See e.g. Scandiamant Aktiebolag* v. *Commissioner of Patents*, 509 F.2d 463, 469-71 (D.C. Cir. 1974).

The parties agree that for the purpose of determining infringement, the structures of the EK-4 and EK-6 cameras

are identical. Kodak denies infringement on the grounds (1) that the accused cameras do not come within the literal terms of the asserted claims;[39] (2) that the angle of deflection in the accused cameras is different from that specified in '211; and (3) that the accused cameras achieve spread control by means other than deflection of the film unit.

Kodak does not contest that the EK-4 and EK-6 cameras meet all elements of claim 8 except the requirements that the exit means be disposed out of the normal path of the film unit and that there be a means of deflecting the film unit out of its normal path and toward the exit slot. It denies meeting these requirements by defining the accused cameras without reference to one of their parts, an exit spring. Without the spring, the exit is in line with the spread rollers and the film unit would not be deflected. But the spring acts as a means of deflecting the film, both narrowing the exit means and taking it out of the normal path of the film. Since the spring is part of the camera, claim 8 is infringed.[40]

Claim 9 specifically calls for the exit to be in the back of the camera and parallel to the normal film path. The arrangement of the light shield housing of EK-4 and EK-6 is

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[39] Kodak argues in this connection that Polaroid is estopped from claiming spread control as the invention, having abandoned claims addressed thereto. Polaroid did abandon claims directed expressly to spreading. The claims ultimately approved claim deflection as the invention, and the patent describes spread control as one of the benefits derived from the invention. Contrary to Kodak's contention Polaroid alleges infringement by a literal reading of the claims' construction thereof. Its position is entirely in accord with *Schriber-Schroth Co.* v. *Cleveland Trust Co.*, 311 U.S. 211 (1940).

[40] It is for this reason as well that Kodak's argument concerning the Murphy '911 patent fails. The EK-4 and EK-6 cameras do not read on Murphy '911 because their exit is not as required by Murphy '991.

in this respect totally different from the claim. Because the exit means in those cameras is not in the back, I find that claim 9 is not infringed.

If claim 10 were valid, it would be infringed by the gripping action of the exit spring.

Infringement is not avoided by reference to the angle of deflection. The claims do not require a particular angle and, as noted earlier, the precise angle is not critical to achieving the benefits of the patent.

Nor can Kodak avoid infringement by suggesting that it is not the camera structure that brings about spread control. It cannot both argue for a narrow construction of the claims and deny infringement based on an expansive reading thereof.

In summary, I find claims 8 and 9 valid and enforceable. The addition of the gripping mechanism of claim 10 is invalid for obviousness. Claim 8 is infringed by the EK-4 and EK-6 cameras, and if it were valid, claim 10 would be infringed as well. The accused cameras do not infringe claim 9.

## IX. *U.S. Patent No. 3,810,220*

During the development of the SX-70 camera Polaroid experimented with several film-loading designs and ultimately settled on a front-loading mechanism. The housing that contains the spread rollers pivots from its closed position to permit insertion of the film pack. Richard Paglia, a Polaroid engineer, was then assigned the task of devising a spread system for a front-loading motorized folding camera. At that time Polaroid had been experiencing leakage of developer fluid from the pod which necessitated periodic cleaning of the spread system. Because cleaning is simpler if the spread rollers are detached, Mr. Paglia de-

signed the mechanism connecting the spread roller housing to the camera housing so that the former could not only be pivoted open to permit film loading, but also separated entirely from the camera housing. This detachable spread roller housing arrangement is the subject of U.S. Patent No. 3,810,220.

As described in the drawings and specifications, the spread roller housing is attached to the rest of the camera by means of two relatively flexible arms which extend from within the housing. Each has a depression or, preferably, an aperture that fits over inwardly-facing projections on the camera housing. The apertures and projections form a hinge and are designed to permit the spread roller housing to rotate out of or into the closed position. By pressing the arms toward each other, it is also possible to disengage the apertures from the projections and thus to detach the spread roller housing from the camera. The patent points out that the ability to remove the housing facilitates maintenance and/or replacement of its components. Because precise alignment between the spread rollers, the film cassette, and the path of the individual film unit out of the camera is essential for proper spreading, it had been thought best to secure the spread roller housing permanently. "Permanent" in this context meant secured with screws or rivets. Although the housing so secured was still detachable—it could be detached with tools—it was not "readily detachable." The patent asserts that the '220 invention achieves both maintenance of precise alignment and separability of the housing. The particular arrangement is said to be advantageous in that placement of the arms and projections inside the camera prevents accidental detachment and results in a neat and clean appearance of the camera when closed. At the same time, the separability feature is not

apparent to an uninformed user, giving the manufacturer the option of telling customers to remove the housing for cleaning or, if customer servicing is unnecessary, withholding such information.

Polaroid asserts infringement by Kodak's EK-4 and EK-6 cameras of claims 1, 2, 3, 4, 5 and 8.

Claims 1, 3 and 5, the independent claims, each describe a self-developing camera. Each calls for an opening in the camera (the "first housing section") into which the film cassette is inserted, and a "second housing section" containing a spread system ("processing means") that extends "forwardly" and across the opening. Each calls for a means for coupling the second housing section to the first in a manner that permits pivoting the second into open and closed positions, and each requires that the coupling mechanism include "manually actuable means for readily disconnecting said second housing section from and connecting it to said first housing section." Claim 1 also requires that the second housing be detachable only in the open, the film-loading position, and claim 2 defines the processing means in that second housing as a pair of rollers. Claim 3 requires that the gear train (the "drive means") extend into the spread roller housing and that it be rendered inoperative when that housing is disconnected from the first housing. Claim 4 calls for the obverse, that the drive means be operative when the two housing sections are in the closed position. Claim 5 adds the description of the system of inwardly facing arms and projections that couple the two housings, and claim 8 requires that the arms include "at least one aperture."

Kodak's defense is premised primarily on invalidity of the patent under 35 U.S.C. § 103. It also denies infringement.

The parties agree that the relevant art is the art of camera design and that a person skilled in that art is someone with an Associate or Bachelor's degree in mechanical engineering and approximately four years experience. The prior art cited by Kodak includes both patents and a number of commercial cameras, as well as Polaroid experimental models.

Before considering Kodak's prior art references, it is useful to understand Polaroid's assertions concerning the scope of the invention. Milton S. Dietz, a Senior Vice President at Polaroid, and its expert witness on this patent, agreed that in August 1970: (a) a self-developing camera with a body (first housing) and a spread roller housing (second housing) hinged together was not new; (b) that the use of motors and gears to drive spread rollers and the use of a gear at the end of a spread roller was old; and (c) that it would have been obvious to one skilled in the art to use an easily detachable housing on a roll film camera and on a self-developing camera using peel-apart film. Nevertheless, Polaroid argues that the patent in issue discloses a genuine improvement over the prior art because (a) the use of a detachable spread roller housing in an integral camera is not obvious given the concern about precise alignment; (b) nothing in the prior art teaches the desirability of separability; and (c) the type of hinge used (flexible arms and projections) would have been thought to be inadequate in an integral camera, making the use of such an uncomplicated arrangement not obvious.

Kodak offered at least seven commercial cameras, including three produced by Polaroid,[41] having disconnectable

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[41] Rolleicord Camera with interchangeable Rolleiken Back, Bertram Camera, Honeywell Elmo Cine Camera, Crislin Insta Camera, and Polaroid Colorpack II, Big Swinger and Little Swinger Cameras.

backs or film-loading doors. All but one have a hinge arrangement comprised of projections on one housing and holes that fit them in the other. Several include flexible arms or levers that permit disengagement of the holes and projections and consequent separation of the camera from its door or back. Polaroid argues that none uses the precise hinge arrangement disclosed in the '220 patent and none was designed for use in an integral camera. Polaroid is correct that the hinges of the prior art references differ in various details from each other and from that described in the patent in suit. I find, however, that the earlier cameras do teach the efficacy of the '220 type of hinge and their use in cameras, i.e., an arrangement comprised of matched holes and projections, one of which is placed on a pair of flexible arms. I further find that the use of such a hinge to permit removal of the film-loading door was well known and its use to disconnect the spread roller housing would be obvious to a person skilled in the art.

The question remains whether the use of such a hinge in an integral camera would be obvious and, related thereto, whether the use of a detachable spread roller housing in an integral camera amounts to invention. Because an integral film unit, by definition, remains whole before, during, and after processing, and nothing is peeled away, the amount of processing composition in the pod must be precisely measured to be just sufficient to cover the exposed area of the film unit. Because there is only just the right amount of processing composition, the manner of spreading is crucial, and precision in spreading depends in large part on the physical arrangement of the spread system. Hence, Polaroid argues that any tampering with that arrangement by, for example, removing the spread rollers would be contra-indicated, and the use of the very simple, uncomplicated

'220 hinge would not be obvious. The evidence showed, however, that all of the hinge components—the projections and arms with apertures—are permanently affixed to the respective housings. They cannot be moved from their original positions without force and consequent damage to the camera. I am not persuaded, therefore, that a detachable spread roller housing represents a greater threat to the integrity of the spread system and the alignment of its several parts than does one that merely pivots open and closed. Whether the housing is opened to admit film, or whether it is entirely removed, the spread rollers are pulled out of alignment with the normal film path. Given the fixed positions of the arms, apertures, and projections that constitute the hinge, no significant difference exists between merely pivoting, on one hand, and, on the other hand, pivoting, detaching and reattaching the housing. The additional demands of an integral camera may render unobvious the employment of some otherwise old mechanisms. (*See* discussion re '392 patent.) But they do not elevate to the level of invention the arrangement of the '220 patent.

Having determined that the use of detachable film doors and backs was well known in the art, as were hinges constructed of matched apertures and projections, for the reasons stated, I further find that the use of such hinges and detachable doors is obvious even in integral cameras.[42] Accordingly, the patent is invalid under 35 U.S.C. § 103.

If the '220 patent were held to be valid, I find that all claims asserted would be infringed by the EK-4 and EK-6 cameras. Kodak's essential argument against infringement

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[42] In view of this finding, based on the prior art cameras, it is unnecessary to consider the prior art patents on which Kodak relies, U.S. Patent No. 3,643,565 to Bellows, U.S. Patent No. 3,283,682 to Rice, and U.S. Patent No. 3,650,188 to Whall.

is that the housing of the accused cameras is not "readily" detached. In support of the argument, it points to the difficulties the Court encountered during trial when it attempted the detaching maneuver. But, in the first place, the maneuver succeeded. The housing was detached. In the second place, the word "readily" must be read in context. The patent distinguishes between a housing that is attached with screws, requiring tools for disconnection, and a housing that can be removed without tools. That Kodak's cameras may not be as easily divided as Polaroid's does not save them from infringement. I find that both accused cameras embody each element of the asserted claims and, therefore, would infringe claims 1, 2, 3, 4, 5 and 8 of the '220 patent were it held to be valid.

## X. *Summary of Conclusions*

In summary, following are my conclusions concerning the validity and infringement of each of the patents in suit.

1. U.S. Patent No. 3,362,821, the polymeric acid patent, is valid and claim 1 is infringed.

2. U.S. Patent No. 3,245,789, the negative dye developer patent, is valid and claims 5 through 9 are infringed.

3. U.S. Patent Nos. 3,594,165 and 3,689,262, the opacifying layer patents, are valid and claims 3, 5 and 6 are infringed.

4. U.S. Patent No. 3,770,439, the mordant patent, is valid but claims 1, 7 and 8 are not infringed.

5. U.S. Patent No. 3,578,540, the symmetrical supports patent, is valid and claims 5, 6 and 8 are infringed.

6. U.S. Patent No. 3,709,122, the rear motor and gear train patent, is invalid, but if it were held to be valid, claims 1, 2, 3, 6 and 8 would be infringed.

7. U.S. Patent No. 3,753,392, the rear pick patent, is valid and claims 1, 2, 3 and 4 are infringed. Claim 12 is not infringed.

8. Claims 8 and 9 of the light shield deflector patent, U.S. Patent No. 3,810,211, are valid. Claim 10 is invalid. Claim 8 is infringed; and if it were held to be valid, claim 10 would be infringed as well. Claim 9 is not infringed.

9. U.S. Patent No. 3,810,220, the detachable spread roller housing patent, is invalid. If it were held to be valid, claims 1, 2, 3, 4, 5 and 8 would be infringed.

Date: September 13, 1985

RYA W. ZOBEL
District Judge

## Memorandum of the District Court Denying a Stay of Its Injunction, October 11, 1985

UNITED STATES COURT OF APPEALS
DISTRICT OF MASSACHUSETTS

CIVIL ACTION NO. 76-1634-Z

POLAROID CORPORATION

VS.

EASTMAN KODAK COMPANY

MEMORANDUM OF DECISION AND ORDER

ZOBEL, D.J.

At a hearing to determine the form of judgment, the parties agreed substantially on the language to be used and on Polaroid's right to injunctive relief. Kodak does not seriously contest the issuance of an order enjoining further violation of those patents judged valid and infringed. It urges, however, that the injunction be stayed pending final resolution of all issues on appeal. For the reasons stated herein, Polaroid's request for injunctive relief is granted, and Kodak's motion for a stay pending appeal is denied. So that Kodak may have time to respond to this order, the injunction will take effect ninety days from today's date, on January 9, 1986.

*The Standard*

A party seeking to stay an injunction pending appeal must make a strong showing that (1) is likely to succeed

on the merits of the appeal; and a showing that (2) unless a stay is granted, it will suffer irreparable injury, that (3) no substantial harm will come to other interested parties, and that (4) a stay will do no harm to the public interest. *Reserve Mining Co.* v. *United States,* 498 F.2d 1073, 1076-77 (8th Cir.), *motion denied,* 419 U.S. 802 (1974), *motion denied,* 420 U.S. 1000, (1975). *See also, Crucible, Inc.* v. *Stora Kopparbergs Bergslags, A.B.,* — F. Supp. —, 236 U.S.P.Q. 842 (W.D. Pa. 1985). In practice this test reduces to a two-part analysis: courts are to assess the movant's chances for success on appeal and weigh the equities as they affect the parties and the public at large.

*Likelihood of Success*

The sensible administration of justice demands that "a stay should not ordinarily be granted if the court determines that the injunction will ultimately take effect in any event." *Reserve Mining Co.,* 498 F.2d at 1077. On appeal of this case an injunction will almost certainly issue.

This assessment neither overprizes this Court's conclusions nor disparages Kodak's continuing legal claims. Kodak plainly has—as it insists—"serious legal issues" to raise on appeal, even issues which "could well be ultimately decided by the Court of Appeals in a manner that is not consistent with this Court's decision." The mere existence of a set of viable claims, however, is not an index of Kodak's likelihood of success on appeal. To avoid an injunction Kodak must prevail not on one or two or even several legal issues but rather on each one of seventeen claims decided by this Court in Polaroid's favor.[1] This case involved

[1] This Court found infringement of a total of twenty-three claims under seven patents held valid. Two of those patents, involving six claims, have expired. Five patents, involving seventeen claims, remain open to continuing infringement.

eleven [2] separate film and camera patents covering integrally-related aspects of the technology of instant photography. This Court judged Kodak to have infringed valid claims under five of the film, and two of the camera, patents.

At oral argument Kodak pointed out that one of the two infringing cameras—the EK-4—was found to infringe only a single claim (No. 8) of a single patent (the '211). Kodak suggested, therefore, that if this Court were reversed as to that one claim, no injunction against the EK-4 would issue. By the same logic, Kodak's EK-6 camera could escape an injunction if this Court's findings were overturned as to the two patents ('392 and '211) and five claims it was found to have infringed. Although this reasoning appears to ease Kodak's burden on appeal, it misses the point that the infringing film and cameras are inextricably bound together. If, for example, this Court's judgment is upheld as to any one of the five film patents judged infringed, Kodak could not continue marketing even noninfringing instant cameras, since they would be useless without infringing film. Conversely, even if Kodak managed to win reversal of all findings as to the film patents, the survival of a single finding of infringement on a camera patent would impel the Court of Appeals to enjoin the marketing of the noninfringing film so as not to induce use of the infringing camera. Under the circumstances, it is unlikely that Kodak will avoid an injunction altogether.

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[2] As noted in the original Memorandum of Decision, this case began as a dispute over twelve patents. The parties waived their claims of infringement and invalidity with regard to one patent; one patent was held invalid as obvious on Kodak's motion for summary judgment; and trial proceeded with respect to the ten remaining patents.

*Memorandum Denying A Stay*

*The Equities*

Kodak's claims of irreparable harm—to its name, its employees, and to the camera-toting public—are seductive.

Kodak argues, first, that an injunction pending appeal will cause irreparable harm to its goodwill and severely disrupt its business. Kodak has sold more than 16 million instant cameras. To enjoin production and sale of its instant film, Kodak points out, will render its cameras useless, "since neither Polaroid nor any other company has film on the market that can be substituted for Kodak's." Such an outcome, Kodak insists, is particularly damaging to a company whose "reputation and goodwill are based in part on the fact that Kodak does not desert its customers. . . ."

Not only will an injunction injure Kodak customers and goodwill, it will also, according to Kodak, cause a "major disruption" of business. If and when Kodak is forced to shut down its instant camera production, 800 full-time and 3700 part-time employees will lose their jobs, and the company will lose its $200-million investment in plant and equipment.

I am not unmindful of the hardship an injunction will cause—particularly to Kodak customers and employees. It is worth noting, however, that the harm Kodak will suffer simply mirrors the success it has enjoyed in the field of instant photography. To the extent Kodak has purchased that success at Polaroid's expense, it has taken a "calculated risk" [3] that it might infringe existing patents. *Smith International, Inc.* v. *Hughes Tool Co.*, 713 F.2d 1573, 1581 (Fed. Cir.), *cert. denied*, 464 U.S. 996, (1983). As one court has observed, the infringer "should not be heard to

[3] To say that Kodak took a calculated risk is not to say that its infringement of Polaroid's patents was willful or deliberate. That issue has been reserved for determination subsequent to trial.

complain" when it loses its gamble and reaps predictable results. *Crucible, Inc.*, 226 U.S.P.Q. at 845.

Kodak argues, second, that whereas it will be damaged irreparably if an injunction issues, Polaroid will suffer "no significant additional harm" beyond "additional money damages and interest on account of additional sales of instant cameras and film." As to that injury, Kodak urges, it is "fully capable of responding in money."

Kodak's promise to pay its way out of any further injury to Polaroid misconstrues the nature of the patent right. As a California court has recently put it:

> [W]here the infringing device will continue to infringe and thus damage plaintiff in the future, monetary damages are generally considered to be inadequate. This inadequacy results from the nature of the patent right itself—the right to exclude others.

*Shiley, Inc.* v. *Bentley Laboratories, Inc.*, 601 F. Supp. 964, 970 (C.D. Cal. 1985) (citing *Smith International*, 718 F.2d at 1578). Because a patent conveys the right to a temporary monopoly, *Graham* v. *John Deere Co.*, 383 U.S. 1, 9 (1966), the Court of Appeals for the Federal Circuit has held that "where validity and continuing infringement have been clearly established, . . . immediate irreparable harm is presumed." *Smith International*, 718 F.2d at 1581. That presumption has particular urgency in this case, where the litigation may continue for the life remaining to those patents in dispute.[4] *See S.C. Johnson, Inc.* v. *Carter-Wallace, Inc.*, — F. Supp. —, 225 U.S.P.Q. 968, 972 (S.D.N.Y. 1985) (showing "great harm" of con-

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[4] Of the patents held valid and infringed, two, '789 and '821, have expired. Three others, '165, '262, and '540, have less than three years to run. The remaining two, '392 and '211, expire in 1990 and 1991, respectively.

tinuing infringement where patent had only 32 months remaining in its term); *see also Crucible, Inc.*, 236 U.S.P.Q. at 846.

Kodak's final argument considers the public interest and finds that it "weighs heavily against granting Polaroid's request for an injunction pending appeal." Kodak's concern for the sixteen million owners of its instant cameras is well-taken. However, as Polaroid has pointed out, those cameras carried an implied warranty to the purchasing public that they were free from infringement. *See* A. Squillante and J. Fonseca, *Williston on Sales*, § 15-15, at 373 (4th ed. 1974). In Polaroid's words: "That fact having been disproved in this action, it now properly falls upon Kodak to make whole any customer who complains."

Kodak's characterization of the public interest not only misallocates risk, it also misconstrues the very concept of public benefit. The public policy at issue in patent cases is the "protection of rights secured by valid patents." *Smith International*, 718 F.2d at 1581. Courts grant—or refuse to stay—injunctions in order to safeguard that policy, even if those injunctions discommode business and the consuming public:

> On balance, I find that the public interest will not be disserved by issuance of an injunction . . . and that the public interest to be served by protection of the nation's patent system outweighs any temporary inconvenience or one-time costs associated with staff training or other costs associated with changeover to another model.

*Shiley*, 601 F. Supp. at 971 (citing *Smith International*, 718 F.2d at 1581). As the Court in *S.C. Johnson* observed of another defendant, Kodak's belated "attempt to deno-

minate itself a public benefactor . . . [is] misplaced. Public policy favors the innovator, not the copier." 225 U.S.P.Q. at 972.

*Summary*

Since the Court of Appeals for the Federal Circuit decided *Smith International* in 1983, district courts have held uniformly that once a patent is judged valid and infringed, its holder is entitled to injunctive relief. They have found money damages deficient against encroachments on rights of exclusivity, and they have judged the public interest better served by a broad policy favoring creativity than by the narrow protection of specific consumers. Kodak's attempts to elude this clear trend in recent patent law are unavailing.

Accordingly, Polaroid's request for injunctive relief is granted, and Kodak's motion for a stay pending appeal is denied.

Dated: October 11, 1985

RYA W. ZOBEL
District Judge

**Judgment of the District Court, October 11, 1985**

UNITED STATES DISTRICT COURT
DISTRICT OF MASSACHUSETTS

Civil Action No. 76-1634-Z

POLAROID CORPORATION

vs.

EASTMAN KODAK COMPANY

JUDGMENT

ZOBEL, D.J.

This Court tried the issues with respect to the validity, infringement and enforceability of ten United States patents owned by plaintiff Polaroid Corporation ("Polaroid") and the Court considered the parties' post-trial briefs and proposed findings of fact. A Memorandum of Decision was rendered by the Court on September 13, 1985, setting forth findings of fact and conclusions of law pursuant to Rule 52, Fed. R. Civ. P., with respect to these ten patents. In addition, on June 10, 1981, the Court granted summary judgment with respect to the validity of another United States patent owned by Polaroid, which was asserted in the complaint herein.

Pursuant to Rule 54(b), Fed. R. Civ. P., the Court determines that there is no just reason for delaying the entry of judgment on the issues decided with respect to these eleven patents and directs the entry of judgment as set forth below. It is hereby

ORDERED AND ADJUDGED, that

1. This Court has jurisdiction over the subject matter of this action and over the parties.

2. Plaintiff Polaroid is the owner by assignment of each of the patents set forth in paragraphs 4-14 of this judgment ("the patents in suit") and of all rights of recovery for infringement thereof.

3. Defendant Eastman Kodak Company ("Kodak") has manufactured and sold in the United States during the term of the patents in suit, without authority from Polaroid, Kodak PR-10 film and Kodak EK-4 and EK-6 cameras.

4. With respect to Land U.S. Patent No. 3,362,821, entitled "Diffusion Transfer Processes Utilizing Photosensitive Elements Containing Polymeric Acid Spacer Layers," issued January 9, 1968:

a. Kodak has failed to carry its burden of proving claim 1 invalid.

b. Kodak has infringed claim 1 by making, using and selling PR-10 film.

c. Kodak has failed to carry its burden of proving unenforceability.

5. With respect to Rogers U.S. Patent No. 3,245,789, entitled "Photographic Products and Processes," issued April 12, 1966:

a. Kodak has failed to carry its burden of proving claims 5, 6, 7, 8 and 9 invalid.

b. Kodak has infringed claims 5, 6, 7, 8 and 9 by making, using and selling PR-10 film.

6. With respect to Rogers U.S. Patent No. 3,594,165, entitled "Novel Photographic Products and Processes," issued July 20, 1971:

a. Kodak has failed to carry its burden of proving claims 3, 5 and 6 invalid.

b. Kodak has infringed claims 3, 5 and 6 by making, using and selling PR-10 film.

c. Kodak has failed to carry its burden of proving unenforceability.

7. With respect to Rogers U.S. Patent No. 3,689,262, entitled "Photographic Products and Processes for Color Diffusion Transfer," issued September 6, 1972:

a. Kodak has failed to carry its burden of proving claims 3, 5 and 6 invalid.

b. Kodak has infringed claims 3, 5 and 6 by making, using and selling PR-10 film.

c. Kodak has failed to carry its burden of proving unenforceability.

8. With respect to Taylor U.S. Patent No. 3,770,439, entitled "Polymeric Mordant in Color Diffusion Transfer Image-receiving Layer," issued November 6, 1973:

a. Kodak has failed to carry its burden of proving claims 1, 7 and 8 invalid.

b. Kodak has not infringed claims 1, 7 and 8.

c. Kodak has failed to carry its burden of proving unenforceability.

9. With respect to Land U.S. Patent No. 3,578,540, entitled "Color Photographic Product Formed by Diffusion Transfer," issued May 11, 1971:

a. Kodak has failed to carry its burden of proving claims 5, 6 and 8 invalid.

b. Kodak has infringed claims 5, 6 and 8 by making, using and selling PR-10 film.

10. With respect to Blinow and Leduc U.S. Patent No. 3,709,122, entitled "Film-Advancing Apparatus," issued January 9, 1973:

a. Claims 1, 2, 3, 6 and 8 are invalid.

b. If the claims were valid, Kodak would have infringed claims 1, 2, 3, 6 and 8 by making, using and selling EK-6 cameras.

11. With respect to Land U.S. Patent No. 3,753,392, entitled "Film-Advancing Apparatus," issued August 21, 1973:

a. Kodak has failed to carry its burden of proving claims 1, 2, 3, 4 and 12 invalid.

b. Kodak has infringed claims 1, 2, 3 and 4 by making, using and selling EK-6 cameras and PR-10 film.

c. Kodak has not infringed claim 12.

d. Kodak has failed to carry its burden of proving unenforceability.

12. With respect to Wareham and Paglia U.S. Patent No. 3,810,211, entitled "Self-Developing Camera System," issued May 7, 1974:

a. Kodak has failed to carry its burden of proving claims 8 and 9 invalid.

b. Claim 10 is invalid.

c. Kodak has infringed claim 8 by making, using and selling EK-4 and EK-6 cameras.

d. Kodak has not infringed claim 9.

e. If the claim were valid, Kodak would have infringed claim 10 by making, using and selling EK-4 and EK-6 cameras.

f. Kodak has failed to carry its burden of proving unenforceability.

13. With respect to Paglia U.S. Patent No. 3,810,220, entitled "Detachable Spread Roller Housing Section," issued May 7, 1974:

a. Claims 1, 2, 3, 4, 5 and 8 are invalid.

b. If the claims were valid, Kodak would have infringed claims 1, 2, 3, 4, 5 and 8 by making, using and selling EK-4 and EK-6 cameras.

14. With respect to Campbell U.S. Patent No. 3,761,269, entitled "Self-Developing Photographic Film Unit with Liquid Trap Pod an Alkali Neutralizing Spacer Element," issued September 25, 1973, claims 1 through 9 are invalid.

15. Effective January 9, 1986, Kodak, its officers, agents, servants, employees, and attorneys, and those persons in active concert or participation with them who receive actual notice of this judgment by personal service or otherwise, are enjoined and restrained from infringing any one or more of the following:

a. Claims 5, 6 and 8 of Land U.S. Patent No. 3,578,540;

b. Claims 3, 5 and 6 of Rogers U.S. Patent No. 3,594,165;

c. Claims 3, 5 and 6 of Rogers U.S. Patent No. 3,689,262;

d. Claims 1, 2, 3 and 4 of Land U.S. Patent No. 3,753,392;

e. Claim 8 of Wareham and Paglia U.S. Patent No. 3,810,211;

including, without limitation, by manufacture, use or sale of PR-10 film and EK-4 and EK-6 cameras.

16. The cause shall be set for determination of the following issues in a subsequent trial to be held by the Court:

a. Whether Kodak's infringement of any one or more of the patents in suit has been willful and deliberate.

b. The amount of damages adequate to compensate Polaroid for Kodak's infringement together with interest and whether such damages should be increased up to three times the amount found, all in accordance with 35 U.S.C. § 284.

c. Whether costs shall be taxed against either party.

d. Whether Polaroid is entitled to its reasonable attorney's fees because this is an "exceptional case" within the meaning of 35 U.S.C. § 285, and if so, the quantum of those fees.

Date: October 11, 1985

RYA W. ZOBEL
District Judge

**Opinion of the District Court on Summary Judgment, February 25, 1981**

UNITED STATES DISTRICT COURT
DISTRICT OF MASSACHUSETTS

CIVIL ACTION NO. 76-1634-Z

POLAROID CORPORATION

VS.

EASTMAN KODAK COMPANY

MEMORANDUM OF DECISION

ZOBEL, D.J.

In this suit for infringement of twelve United States patents assigned to Polaroid Corporation, defendant Eastman Kodak Company has moved for partial summary judgment, pursuant to Rule 56 of the Federal Rules of Civil Procedure, with respect to the claims based on Polaroid's U.S. Patents Nos. 3,594,165 ("165") and 3,689,262 ("262").

Both patents deal with the art of "instant" photography. In the case of instant photography the entire development process necessary to transform the exposed film into a finished photograph is accomplished within the film unit itself immediately after exposure in the camera. A processing solution which contains all the necessary chemicals to transform the negative into a finished "positive" is injected into the film unit after the picture has been taken. Thus the film unit itself acts as a type of darkroom. This method of transferring the image on the negative onto the positive is called "diffusion transfer photography".

One of the essential problems presented to the inventors of this technique was how to provide the light-tight container necessary for film development without inhibiting film exposure necessary at the instant the picture is taken.

The problem was solved by shielding one side of the photosensitive material with a permanent opaque layer which prevents exposure of the photosensitive material during the development process but does not obstruct exposure of the film when the photograph is taken. The other "exposed" side was, through a mechanism in the camera, covered with a layer of opaque paper as the film was pulled out of the camera, and the two were "peeled apart" after the development process had been completed. Polaroid's 165 and 262 patents represented a substantial improvement over that technique by including in the processing fluid itself an opacifying agent such as carbon black. Thus after the picture has been shot, and the processing fluid is injected into the film unit, it acts as a shield between the light outside the unit and the "exposed" side of the photosensitive material within. This technique enables development outside of the camera to be observed and at the same time does not require the photographer to "peel apart" the negative and the positive.

Defendant asserts that plaintiff's 165 and 262 patents are invalid because they were granted in violation of the standards for patentable invention set forth in 35 U.S.C. § 103.[1] That section mandates that at the time the inven-

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[1] Section 103 of Title 35 states:

> A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the

*(footnote continued on following page)*

tion was made it not be obvious to one with ordinary skill in the art. The Supreme Court has held that a determination of validity under Section 103 requires resolution of various issues including the scope and content of the prior art, the differences between the prior art and the claims in issue, and the level of ordinary skill in the particular art as well as possible consideration of such secondary factors as commercial success, long felt but unsolved needs, and failure of others. *Graham* v. *John Deere Co.*, 383 U.S. 1 (1966). These issues raise questions of fact. *Shanklin Corporation* v. *Springfield Photo Mount Company*, 521 F.2d 609 (1st Cir. 1975), *cert. denied*, 424 U.S. 914 (1976).

In support of its motion defendant cites U.S. Patents 3,415,645 ("645") and 3,053,659 ("659") as the pertinent prior art and argues that both patents at issue here would have been obvious to one with ordinary skill in the art in view of the teachings of this prior art. Both parties have submitted a series of affidavits of experts supporting and contesting this contention.

Assuming, as I do, that the 659 and 645 patents do constitute prior art, that still does not resolve the question of obviousness. However persuasive defendant's argument may be with the benefit of hindsight, whether the patents at issue here were anticipated by the prior art must be judged in terms of obviousness to one skilled in the art at the time the invention was made. *Colourpicture Publishers, Inc.* v. *Mike Roberts Color Productions, Inc.*, 394 F.2d

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*(footnote continued from preceding page)*

> subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

431 (1st Cir. 1968), *cert. denied,* 393 U.S. 848 (1968). In view of the contradictory affidavits before the Court it is impossible to conclude that no issue of fact is presented regarding obviousness. I cannot say that it is clear to me as a layman from the prior art that plaintiff's invention was obvious to a person of ordinary skill in the art. The First Circuit has observed, quoting Judge Learned Hand,

> '[c]ourts, made up of laymen, as they must be, are likely to either underrate or overrate, the difficulties in making new and profitable discoveries in fields with which they cannot be familiar. . .' *Safety Car Heating Co.* v. *Gen. Elec. Co.,* 155 F.2d 937, 939 (2d Cir. 1946). A layman can be beguiled into finding a device "obvious" just because it appears so simple when viewed after the deed has been done.

*Colourpicture Publishers, Inc.* v. *Mike Roberts Color Productions, Inc.,* 394 F.2d 431, 434 (1st Cir. 1968), *cert. denied,* 393 U.S. 848 (1968). It was not the intent of Congress to have such a crucial determination rest solely upon the subjective impression of federal judges guided only by the force of hindsight. *J.G. Furniture Co.* v. *Litton Business Systems, Inc.,* 436 F. Supp. 380 (S.D.N.Y. 1977).

It is for this very reason that Courts in this Circuit and others have been reluctant to grant summary judgment in patent infringement actions. *See, Colourpicture Publishers, Inc.* v. *Mike Roberts Color Productions Inc.,* 394 F.2d 431 (1st Cir. 1968), *cert. denied,* 393 U.S. 848 (1968); *Northrop Architectural Systems* v. *Lupton Manufacturing Co.,* 437 F.2d 889 (9th Cir. 1971); *Schroeder* v. *Owens-Corning Fiberglas Corp.,* 514 F.2d 901 (9th Cir. 1975). As was stated by the Court in the Southern District of New

York in denying partial summary judgment in a patent infringement action:

> In patent infringement litigation, the court must exercise unusual caution before disposing of the case summarily. [Citations omitted]
>
> Summary judgment will not be granted in a patent infringement case where, for example, the court lacks necessary special knowledge; or where it is desirable to hear expert witnesses and to hear them cross-examined; or *where there are conflicting affidavits as to differences and similarities in construction and function; or where there are conflicts concerning* the meaning of the specifications and claims, the interpretations of the file wrapper and the Patent Office action, and *the significance of the prior art. SerVaas & Co., Inc.*, v. *Dritz*, 185 F. Supp. 61, 63 (S.D.N.Y. 1960) [Emphasis supplied].

The contrary assertions by the experts on both sides relating to the determination of obviousness presents a material issue of fact. Accordingly, defendant's motion for partial summary judgment is denied.

February 25, 1981
Date

RYA W. ZOBEL
*District Judge*

## Opinion of the District Court on Summary Judgment, July 10, 1981

UNITED STATES DISTRICT COURT
D. MASSACHUSETTS

July 10, 1981.

Civ. A. No. 76-1634-Z

POLAROID CORPORATION

v.

EASTMAN KODAK COMPANY

Laurence S. Fordham, William J. Cheeseman, Foley, Hoag & Eliot, Boston, Mass. (William K. Kerr, Herbert F. Schwartz, Kenneth B. Herman, Edward F. Mullowney, New York City), for plaintiff.

John M. Hall, Choate, Hall & Stewart, Robert S. Frank, Jr., Boston, Mass. (Francis T. Carr, Kenneth E. Madsen, Michael J. Lennon, Kenyon & Kenyon, New York City), for defendant.

### MEMORANDUM OF DECISION

ZOBEL, District Judge.

In this action Polaroid Corporation ("Polaroid") contends that Eastman Kodak Company ("Kodak") has infringed twelve patents issued to Polaroid. All of the patents in suit relate to the process known as "instant photography". Kodak has denied infringement and has alleged that all of the patents are invalid or unenforceable. The case is before me on Kodak's motion for partial summary judgment with

respect to Polaroid's U.S. Patent No. 3,761,269 ("269"). Kodak asserts that the '269 patent is invalid as a matter of law because it was issued in violation of the standards required for patentable invention set forth in 35 U.S.C. § 103.

## I. The Problem

The '269 patent, issued to Polaroid on September 25, 1973 on an application filed by Dr. John E. Campbell, concerns film units used in "instant" photography. One feature of instant photography is that the entire process of development takes place in the film unit itself. The film unit is composed of several photosensitive and print receiving layers encompassed within a light-tight container, and a pod containing processing fluid necessary to transform the negative into a finished positive. After the film has been exposed to light at the instant the picture is taken, the film unit is passed between two rollers which rupture the pod and spread the processing fluid between the layers. Development of the finished photograph then takes place within the film unit.

To assure that the processing fluid is evenly distributed between the photosensitive layers it is necessary to provide excess processing fluid in the film unit. One of the problems presented to the inventors of this technology was the containment of this excess fluid within the unit itself. This was ultimately solved by providing a trapping mechanism located within the film unit designed to receive and hold the excess fluid.

The trapping mechanism includes a "spacer element" which has two features. It is made of a relatively incompressible material and has gaps or perforations within which the excess processing fluid is deposited and retained. As the film unit passes through the rollers the spacer element

serves to force the rollers apart thus preventing them from squeezing liquid back out of the trap. The gaps or perforations accommodate all of the excess processing fluid.

Two possible problems are presented by the presence of excess processing fluid within the film unit itself. First, despite the gaps the excess processing liquid may flow back into the image-receiving area and damage the quality of the finished photograph, either while passing through the rollers, or in the case of integral film-units, while stored in the film unit after development has been completed. Second, since the processing liquid is highly alkaline in nature there is a potential safety danger to the hands and clothes of the user from leakage of excess processing fluid. These are the problems which the '269 patent was designed to solve.

II. Scope of the '269 Patent

The "invention" of the '269 patent is two-fold. The patent teaches, first, that by placing an acid in the trapping mechanism, the alkaline processing fluid will be neutralized and consequently rendered harmless. Second, the patent discloses that *the spacer element itself* can be coated or impregnated with the acid necessary to neutralize the processing liquid if the element is formed of an absorbent, fibrous material. By permeating the spacer element with acid rather than placing it in the gaps formed for trapping the excess processing liquid, space which would have been taken up by the acid is available for trapping. Thus in combination the '269 patent discloses a trapping mechanism which neutralizes the excess processing fluid while providing greater trapping capacity by coating or imprenating a fibrous, absorbent spacer element with an acid.

The fact that this is the essential novelty upon which patentability was predicated is apparent from the form of

the claim and the prosecution history. It is a basic proposition of patent law that the claims define the invention. *Great A & P Tea Co.* v. *Supermarket Equipment Corp.*, 340 U.S. 147, 71 S. Ct. 127, 95 L. Ed. 162 (1950). Claim 1 of the '269 patent describes in the preamble the film unit itself and a compression resistant spacer element which serves to separate the rollers as the film unit passes between them. It also describes the multiplicity of gaps within the spacer element which provide trapping space for the excess processing liquid. The improvement clause then defines the alleged inventive contribution:

> The improvement wherein said spacer element includes an acid for neutralizing said processing liquid trapped in said spaces upon contact with said liquid.

Claim 1 is written in a form long known in the patent field as a "Jepson" claim. This type of claim stems from *Ex Parte Jepson*, 243 O.G. 525 (1917) in which a patent was granted for adding an improvement to an old and otherwise well known device. In approving that form of claim, the Assistant Commissioner stated:

> The whole apparatus upon which the applicant's invention is engrafted is not a part of his invention, and yet it must be considered and is as essential as the pedestal of a statue is essential to the statue, although it is no part of it. 243 O.G. at 257.

[1] Thus in using the *Jepson* form the patentee relies upon that which follows the word "improvement" for his patentable claim. The preamble merely recites the prior art but forms no part of the inventor's patentable contribution. *Wells Mfg. Corp.* v. *Littlefuse, Inc.*, 547 F.2d 346 (7th Cir. 1976); *Delong Corp.* v. *Raymond Intern., Inc.*,

622 F.2d 1135 (3rd Cir. 1980); *Application of Sutherland*, 347 F.2d 1009 (C.C.P.A. 1965); *Application of Simmons*, 312 F.2d 821 (C.C.P.A. 1963); *Application of Dinh-Nguyen*, 492 F.2d 856 (C.C.P.A. 1974); *California Car Wash Systems, Inc.* v. *Danco, Inc.*, 348 F. Supp. 958 (D. Colo. 1972).

[2] In any improvement patent the preamble functions as necessary background enabling the reader to understand the milieu within which the invention is to operate and upon which it works an improvement. However, where as here the preamble is a mere description of the machine within which the improvement is to operate and is not necessary to give meaning to the claim it will not be read as a limitation on the claim. *Wells Mfg. Corp.* v. *Littlefuse, Inc.*, 547 F.2d 346 (7th Cir. 1976).

The prosecution history supports the conclusion that it was the improvement clause of the '269 patent alone upon which patentable novelty was predicated. As originally filed, claim 1 set forth as the "improvement" both the fibrous spacer element with a multiplicity of gaps and the placement of a neutralizing acid within that element. This claim was rejected by the Patent Examiner on the ground that a trapping mechanism including such a spacer element was well known in the art and could not form the basis for patentable invention. In response Polaroid amended its patent claim by moving the improvement clause so as to claim only the inclusion of the neutralizing acid within the spacer element as the alleged improvement. The patent attorney prosecuting the application filed a response along with the amendment stating:

> In claim 1, the "improvement" part of the *Jepson*-style claim has been made more specific *in order to*

> *point out more clearly that which is old and that upon which patentable novelty is predicated.*
>
> The present invention is directed to the disclosed film units including a spacer element or liquid trapping means, *which film units were known prior to the invention, the essence of the invention being the concept of including an acid in the spacer element to neutralize excess processing fluid.* [Emphasis supplied].

The claim was allowed as amended.

For the purpose of determining the question of obviousness then it is assumed that the scope of the '269 patent includes 1) the use of an acid to neutralize the excess processing fluid and 2) the inclusion of that acid within the spacer element itself. Those elements forming part of the preamble, namely, the film unit, the spacer element and the trapping means or "gaps" are prior art and are not within the scope of this patent. As such they form no part of the inquiry concerning obviousness.

## III. Obviousness

A patent will be declared invalid if it fails to meet the standard set forth in 35 U.S.C. § 103.[1] Pursuant to this section a patent is invalid if the alleged inventive contribution would have been obvious at the time the invention was made to one skilled in the art to which the patent pertains.

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[1] Section 103 of Title 35 states:

> A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

In the leading case of *Graham* v. *John Deere Co.*, 383 U.S. 1, 86 S. Ct. 684, 15 L. Ed.2d 545 (1966) the Supreme Court enunciated the factual inquiries that must be made in order to determine the legal issue of obviousness. The Court must determine 1) the scope and content of the prior art; 2) the differences between the prior art and the claims at issue; and 3) the level of ordinary skill in the pertinent art.[2]

A. Scope and Content of the Prior Art

The Patent Examiner cited four patents as pertinent prior art.[3] Each patent cited by the Examiner discloses a trapping mechanism made up of a spacer element which is compressant resistant and serves to space apart the rollers as the film unit passes through them. In addition, each patent refers to a multiplicity of gaps for trapping the excess processing fluid. All four patents depict a comb-like spacer element with the space between the teeth of the comb serving as the trapping space for the deposit of excess processing fluid. Such an element was also included in the '269 patent as one of the design alternatives for the spacer element. One of the cited patents also discloses a variable volume trap which can adjust to the amount of excess processing composition present in the film unit.

Given this cited prior art the reasons for the Patent Examiner's rejection of the original formulation of claim 1 of the '269 patent are clear. The use of a comb-like compres-

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[2] The parties agree that the level of skill in the art of instant photography is very high and generally involves persons trained in the fields of chemistry or engineering.

[3] The patents cited were: U.S. Patent Nos. 3,621,768 and 3,607,285 issued to Richard C. Chen; 3,652,282 issued to Edwin H. Land, and 3,652,281 issued to Albert J. Bachelder and Frederick J. Binda, all of which are assigned to Polaroid Corporation.

sion resistant spacer element to trap excess processing fluid was well known in the art prior to the '269 patent application and could not form the basis for patentability.

None of the patents cited by the Examiner discloses the use of an acid to neutralize the excess processing liquid or the placement of such an acid within the spacer element itself. But Kodak points to two patents not cited which the parties agree do constitute prior art under the terms of 35 U.S.C. § 102.[4]

[3] U.S. Patent Number 2,686,717 ("717"), the first of the patents upon which Kodak relies, issued to Polaroid as assignee of the applicant Edwin H. Land, on August 17, 1954. The '717 patent specifications [5] describe a film unit like that described in the '269 patent composed of a series of superimposed layers including a photosensitive layer, a rupturable pod filled with an alkaline processing liquid and a trapping area. Included within the trapping area is a compression resistant spacer element.

The '717 patent discloses three alternative designs for this spacer element. Figure 1 depicts two narrow strips

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[4] 35 U.S.C. §§ 102(a) and (b) provide:

> "A person shall be entitled to a patent unless—
>
> (a) the invention was known or used by others in this country or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for patent, or
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of the application for patent in the United States."

[5] While it is the claims which define the scope of the patent monopoly, in construing a patent the Court may look to the specifications and drawings with a view to ascertaining the invention. *Philip* v. *Mayer, Rothkopf Industries,* 635 F.2d 1056 (2d Cir. 1980).

between which the trapping space is formed; Figure 5 depicts a comb-like element, like that depicted in '269 with the gaps between the teeth of the comb forming adequate space within which the excess processing fluid is deposited; and Figure 8 depicts a single *porous* trapping element made of heavy gauze within which the excess processing composition is absorbed.

The '717 patent recognizes the dual problems presented by the excess processing liquid—migration from the trapping area into the image-receiving area and safety to the user in the event of leakage. In order to solve these problems the '717 patent proposes the addition of an insolubilizing agent in the trapping area which by increasing the viscosity of the processing liquid renders it immobile. The patent states that an acid may be used for this purpose which will have the added benefit of neutralizing the alkaline liquid and lowering the pH. The '717 patent states:

> To insolubilize these materials an acid, such as maleic acid, . . . may be incorporated in the trapping area to neutralize the alkali in the liquid and lower the pH below 7, thereby rendering these film-forming materials relatively insoluble.

The '717 patent goes on to suggest that when using the porous spacer element disclosed in Figure 8 *the insolubilizing agent may be included within the spacer element itself* by dipping the element into the agent:

> When a porous material is additionally included in the trapping portion it may be dipped in a bath of the insolubilizing reagent before being applied to the film construction . . .

Thus the '717 patent teaches that if an acid is incorporated into the spacer element itself it will have the effect of

both neutralizing and insolubilizing the excess processing liquid.

The other patent upon which Kodak relies in this motion is U.S. Patent Number 1,026,096 ("096") issued to Polaroid on April 14, 1966. The trap of the '096 patent operates in the following manner: prior to exposure the porous spacer element is contained on two separate sheets constituting the positive and negative film elements respectively, which are hinged together in the middle. Upon exposure the sheets are brought together when the film unit is passed through the camera rollers and a single porous trapping element is formed. The trap then operates in the usual fashion to trap and neutralize the excess processing fluid.

The '096 patent recognizes the need to trap and retain the highly caustic excess processing liquid "in order to prevent its undesired escape from the lamination within and/or without the camera apparatus." To solve this problem the '096 patent proposes the use of a spacer element composed of a permeable absorbent material containing an acid. Such a spacer element, the patent suggests would be adapted to neutralize the excess processing composition upon contact:

> It has now been discovered that the aforementioned problems presented by caustic processing composition overrun, may be prevented by trapping means which comprise a permeable acid-containing layer . . . adapted to trap or retain and neutralize liquid processing composition upon contact . . .

The specific acids suggested for use in the trap by the '096 patent are precisely those suggested by the '269 patent in suit.[6]

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[6] These acids include: ascorbic, sulfamic, oxalic, maleic, succinic, boric, malonic, tartaric and fumaric acid.

B. The Difference Between the Prior Art and the '269 Claims

[4, 5] It is a settled proposition of patent law that issued patents are presumed valid. 35 U.S.C. § 282. Such a presumption is rebuttable however and merely shifts the burden of proof to the party attacking the validity of the patent. *Dual Mfg. & Engineering, Inc.* v. *Burris Industries, Inc.*, 619 F.2d 660 (7th Cir. 1980). Where it is shown by the party attacking the validity of the patent that relevant prior art was not considered by the Patent Office the presumption of validiy is dissipated. *Futorian Mfg. Corp.* v. *Dual Mfg. & Engineering*, 528 F.2d 941 (1st Cir. 1976).

Kodak asserts that since neither '096 nor '717 were cited by the Patent Examiner no presumption of validity can attach to the '269 patent for these purposes. Polaroid disputes this contention asserting that two of the three Examiners cited the '717 patent in earlier patent applications and that the '717 patent was in the class searched by the Patent Examiner in the '269 patent application. Hence Polaroid contends that this Court must presume that the uncited prior art was known to the Patent Examiner and cast aside as less pertinent than the art cited.

For the purposes of this motion I will assume that, at least as to the '717 patent, the Patent Examiner knew of the prior art. Such an assumption merely operates to maintain the burden of proof upon Kodak and is not dispositive of the issue. A finding of invalidity may still be warranted where Kodak meets its burden of proof.

The issue thus becomes whether, in light of the '717 patent and the '096 patent, the solution posited by the '269 patent was obvious within the meaning of 35 U.S.C. § 103. I conclude that it was.

[6] It is clear from a reading of the '717 and the '096 patents as well as the patents cited by the Examiner that the problems of migration and safety posed by the presence of excess processing fluid within the film unit itself were recognized long prior to the introduction of the '269 patent. The solution posed by both '717 and '096, namely, to incorporate an acid into a porous spacer element thus effecting a neutralization of the fluid is identical to that postulated in '269. Given the presence of '717 and '096 such a solution would have been obvious to one skilled in the art at the time the "invention" was made.[7]

It is immaterial, despite Polaroid's arguments to the contrary, that the '269 patent is directed to an integral film unit while '096 and '717 relate to "peel-apart" film units. It is true that the problem of migration exists for a longer period of time in an integral film unit than in the peel-apart variety, since in the latter the trapping area is located in the paper which is ultimately discarded by the user while in the former the excess processing liquid remains within the trap for the life of the photograph. However, the problem itself

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[7] Even if I were not to hold here that the alleged invention of the '269 patent was an obvious development in light of the prior '096 and '717 patents, a finding of invalidity is not precluded. Certainly the neutralizing capabilities of acids were well known to anyone working in the art of chemistry long before 1973. Hence the use of an acid in the trapping mechanism to accomplish a neutralization reaction was merely an adaption of a known process to a new use. Such an adaption, while requiring ingenuity, was not more than could be expected by a mechanic skilled in the art. *See Mandel Bros.* v. *Wallace,* 335 U.S. 291, 69 S. Ct. 73, 93 L. Ed. 12 (1948). As for the inclusion of the acid within the spacer element itself, such a change in form, proportion or degree is a solution which one might expect from the ordinary skilled mechanic and may not rise to the dignity of invention. *Fowler* v. *Sponge Products Corp.,* 246 F.2d 223 (1st Cir. 1957). In view of today's holding however, I need not reach this question.

remains the same—to contain the liquid and to neutralize it. The '269 patent solves that problem in the same manner as do the two prior art patents.

Polaroid also contends that the "invention" of the '269 patent could not have been obvious to one skilled in the art at the time of the invention from '717 because the '717 patent is primarily concerned with insolubilizing the excess processing liquid rather than with neutralizing it. While it is true that the insolubilization reaction is the primary teaching of the '717 patent, that patent also teaches that a neutralization reaction will occur if the insolubilizing agent used is an acid. In view of this teaching it was clearly obvious to incorporate it in exactly the same manner into a patent solely concerned with neutralization. Such a step is not the type of "advance" upon which patentable monopolies were intended to be predicated.

Insofar as Polaroid contends that the *trap design*, particularly that of the spacer element, differs in '269 from that revealed in '096 and '717, these contentions are immaterial to the present motion since the trap design forms no part of the patentable invention disclosed in '269 and was clearly disclosed in the prior art cited by the Patent Examiner.

[7] Finally, Polaroid argues vociferously that Kodak's long-felt need for the trap design embodied in the '269 patent and Polaroid's commercial success with the trap negates the contention of obviousness. While such factors may be relevant to an inquiry on the question of obviousness, commercial success without invention will not make for patentability. *Great Atlantic & Pacific Tea Company* v. *Supermarket Equipment Corp.*, 340 U.S. 147, 71 S. Ct. 127, 95 L. Ed. 162 (1950). The fact that any new device is successful in the marketplace is an indication that it is a

good idea and serves a useful function, but scores of good ideas do not rise to the level of invention necessary for patentability.

[8] This case is an appropriate one for partial summary judgment. Although summary judgment is not generally favored in patent cases, in this Circuit summary judgment will be granted where "the patent in suit and the prior art are readily understandable by the lay mind without any more expert aid than that afforded by the depositions and affidavits of record." *American Tube & Controls, Inc.* v. *General Fittings Co.*, 407 F.2d 1291, 1293 (1st Cir. 1969). This is just such a case. There are no complex principles of chemistry or engineering necessary to understand the basic problem of liquid containment involved here and the neutralization solution provided by including an acid within a porous spacer element. The fact that this solution had the additional benefit of freeing up additional space for trapping thus increasing trapping capacity is a mechanical concept readily understandable by a lay mind. This Court has no need for expert affidavits or testimony to decide the issue of obviousness involved here.[8]

In conclusion I find that the alleged invention of the '269 patent would have been obvious to one skilled in the art at the time the invention was made, and that the patent is, therefore, invalid.

Accordingly, Kodak's motion for partial summary judgment is allowed in accordance with this opinion.

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[8] Polaroid's submission of the affidavit of John E. Campbell, the "inventor" of the '269 patent in suit, in which he states that the invention would not have been obvious to one skilled in the art at the time of the invention is not conclusive since this is the ultimate legal issue to be decided and is reserved for the Court. *Dual Mfg. & Engineering* v. *Burris Industries, Inc.*, 619 F.2d 660 (7th Cir. 1980).

**Order of the Court of Appeals Denying a Stay of the District Court's Injunction, January 7, 1986**

UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT

Appeal No. 86-604

POLAROID CORPORATION,

*Plaintiff-Appellee,*

v.

EASTMAN KODAK COMPANY,

*Defendant-Appellant.*

Before

MARKEY, *Chief Judge,*

SMITH and NEWMAN, *Circuit Judges*

ORDER

On November 4, 1985, Eastman Kodak Company (Kodak) filed a motion under Rule 8(a), Fed. R. App. P., seeking a stay of an injunction issued on October 11, 1985 by the United States District Court for the District of Massachusetts, the injunction being effective January 9, 1986.

On January 6, 1986, Kodak filed an emergency motion seeking a stay of the same injunction pending a decision on the motion under Rule 8(a).

On October 11, 1985, the district court denied the stay here sought by Kodak, accompanying that denial with a Memorandum of Decision and Order stating the court's reasons for the denial.

*Order Denying a Stay*

Having fully considered all of the submissions and having carefully reviewed the well considered reasons set forth in the district court's Memorandum, this court finds no adequate basis for reaching a conclusion different from that of the district court with respect to the requested stay of the injunction.

Accordingly, it is ORDERED THAT:

(1) The motion for stay filed under Rule 8(a) is denied.

(2) The emergency motion for stay is denied as moot.

FOR THE COURT

/s/ HOWARD T. MARKEY

.....

Howard T. Markey
Chief Judge

7 January 1986
Date

Note: This Order will not be published in a printed volume because it does not add significantly to the body of law and is not of widespread legal interest. It is a public record. It is not citable as precedent.

**Judgment of the Court of Appeals, January 7, 1986**

UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT

No. 86-604

CIVIL ACTION No. 76-1634-Z

POLAROID CORPORATION,

*Plaintiff-Appellee,*

v.

EASTMAN KODAK COMPANY,

*Defendant-Appellant.*

JUDGMENT

On Appeal from the United States District Court for the District of Massachusetts.

in Case No(s). CA 76-1634-Z.

This CAUSE having been heard and considered, it is

ORDERED and ADJUDGED:

AFFIRMED.

ENTERED BY ORDER OF THE COURT

/s/ FRANCIS X. GINDHART,

.....

Francis X. Gindhart

Clerk

Dated: April 25, 1986

## Constitutional Provisions and Statutes Involved

CONSTITUTION OF THE UNITED STATES OF AMERICA
ARTICLE I

Section 8. The Congress shall have Power . . .

. . .

To promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries;

TITLE 35, UNITED STATES CODE

§ 101. Inventions patentable

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

§ 102. Conditions for patentability; novelty and loss of right to patent

A person shall be entitled to a patent unless—

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for patent, or

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of the application for patent in the United States, or

(c) he has abandoned the invention, or

(d) the invention was first patented or caused to be patented, or was the subject of an inventor's certificate, by the applicant or his legal representatives or assigns in a foreign country prior to the date of the application for patent in this country on an application for patent or inventor's certificate filed more than twelve months before the filing of the application in the United States, or

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent, or

(f) he did not himself invent the subject matter sought to be patented, or

(g) before the applicant's invention thereof the invention was made in this country by another who had not abandoned, suppressed, or concealed it. In determining priority of invention there shall be considered not only the respective dates of conception and reduction to practice of the invention, but also the reasonable diligence of one who was first to conceive and last to reduce to practice, from a time prior to conception by the other.

§ 103. Conditions for patentability; non-obvious subject matter

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the

time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

§ 112. Specification

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

A claim may be written in independent or, if the nature of the case admits, in dependent or multiple dependent form.

Subject to the following paragraph, a claim in dependent form shall contain a reference to a claim previously set forth and then specify a further limitation of the subject matter claimed. A claim in dependent form shall be construed to incorporate by reference all the limitations of the claim to which it refers.

A claim in multiple dependent form shall contain a reference, in the alternative only, to more than one claim previously set forth and then specify a further limitation of the subject matter claimed. A multiple dependent claim shall not serve as a basis for any other multiple dependent claim. A multiple dependent claim shall be construed to incorporate by reference all the limitations of the particular claim in relation to which it is being considered.

*Statutes Involved*

An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.

§ 282. Presumption of validity; defenses

A patent shall be presumed valid. Each claim of a patent (whether in independent, dependent, or multiple dependent form) shall be presumed valid independently of the validity of other claims; dependent or multiple dependent claims shall be presumed valid even though dependent upon an invalid claim. The burden of establishing invalidity of a patent or any claim thereof shall rest on the party asserting such invalidity.

The following shall be defenses in any action involving the validity or infringement of a patent and shall be pleaded:

(1) Noninfringement, absence of liability for infringement or unenforceability,

(2) Invalidity of the patent or any claim in suit on any ground specified in part II of this title as a condition for patentability,

(3) Invalidity of the patent or any claim in suit for failure to comply with any requirement of sections 112 or 251 of this title,

(4) Any other fact or act made a defense by this title.

In actions involving the validity or infringement of a patent the party asserting invalidity or noninfringement

shall give notice in the pleadings or otherwise in writing to the adverse party at least thirty days before the trial, of the country, number, date, and name of the patentee of any patent, the title, date, and page numbers of any publication to be relied upon as anticipation of the patent in suit, or, except in actions in the United States Claims Court, as showing the state of the art, and the name and address of any person who may be relied upon as the prior inventor or as having prior knowledge of or as having previously used or offered for sale the invention of the patent in suit. In the absence of such notice proof of the said matters may not be made at the trial except on such terms as the court requires.